INSIDE: HOW HUNGRY COWS HELP SAGE-GROUSE

Montana Outdoors

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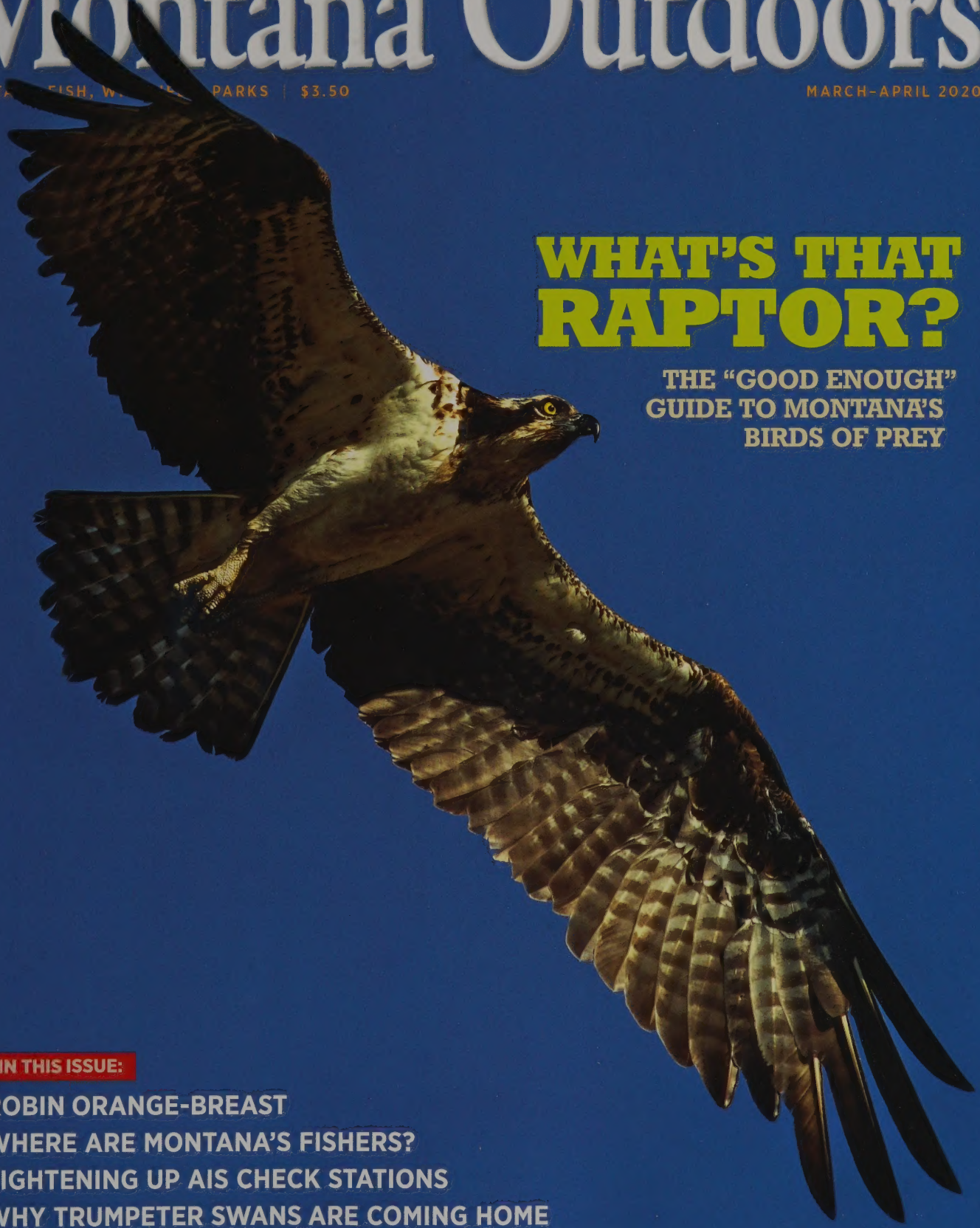
MARCH–APRIL 2020



WHAT'S THAT RAPTOR?

THE "GOOD ENOUGH" GUIDE TO MONTANA'S BIRDS OF PREY

IN THIS ISSUE:

ROBIN ORANGE-BREAST

WHERE ARE MONTANA'S FISHERS?

TIGHTENING UP AIS CHECK STATIONS

WHY TRUMPETER SWANS ARE COMING HOME

Montana Outdoors

FIRST PLACE MAGAZINE:
2005, 2006, 2008, 2011, 2017, 2018
Awarded by the Association for Conservation Information

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VOLUME 51, NUMBER 2

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Montana Outdoors

MARCH–APRIL 2020

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AMERICAN ROBIN Robins are familiar birds common throughout Montana, especially in residential areas. See page 16 to read why one writer is giving these "merry revelers" a second look. Photo by Chris McGowan

FRONT COVER Ospreys are just one of 16 raptors we help readers learn to identify in our "good enough" guide starting on page 18. Photo by Carol Polich.

LETTERS

Voice ID

After reading your article on harlequin ducks ("Grim Future for a Festive Bird?" November-December, 2019), I'm confused. It states that harlequin ducks mate for life, but then later suggests that after the female starts to incubate the eggs, the "male heads back to the Pacific." How in the world do the pairs ever find their mates in the vast Pacific Coast waters after the mating season has concluded? It seems like an impossible mission. But maybe that explains the declining population: The poor birds can't find each other!

David Turner
Helena

Chris Hammond, FWP nongame wildlife biologist in Kalispell, responds: Harlequin ducks pair up on their winter grounds along the Pacific Ocean and return to these same sites year after year. The males return two to three months before the females, but they find a way to reconnect. Like so many bird species, each harlequin duck has a distinctive call that humans can't differentiate but other harlequins can. It's likely that if the male and female get within "shouting distance" of each other, they reunite and return to Montana the following spring.

New neighbor

I just finished reading your November-December 2019 issue containing the article on the Tyrannosaurus rex discovered at Fort Peck Reservoir by Kathy Wankel in 1988 and recently relocated to the Smithsonian Institution ("The Wankel T. Rex Makes 'The Show'"). The article and entire issue are outstanding. I live in Virginia near Washington, D.C., but spend each August and September in Livingston fly-fishing. My husband and I started coming to Montana in 1991. He has passed but I keep coming. We were regular visitors to the Museum of the Rockies in Bozeman and were always amazed by the Wankel T. Rex on display there. Now it is only about 10 miles from my home.

Grim Future for a Festive Bird?

FWP biologists and others track harlequin ducks to learn why populations appear to be declining. By Laura Lundquist

On May 1, 2018, at his office

Sue Farmer
Springfield, VA

Tubby tabbies

The November-December 2019 issue included a short article on the loss of nearly 3 billion birds in North America during the past half century ("'Really wrong' bird losses," Outdoors Report). Your readers should know that a major contributor to this loss is predation by cats allowed to roam outdoors, second only to habitat loss in causing bird number declines. People need to keep their cats indoors.

Earl Brown
Wichita, KS

Feral hogs forever?

Your September-October 2019 article on feral hogs ("Feral pigs knocking on Montana's door," Outdoors Report) states that the Montana Legislature has prohibited hunting these animals. That doesn't make sense. If they are a pest, there ought to be an open season on them. They are probably good eating, besides. In Hawaii they have a similar problem, but it is legal to hunt and consume them at any time of the year. The Montana Legislature needs to reconsider its decision.

Tom Peets
Salmon, ID

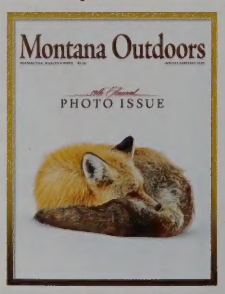
The editor replies: It would seem to make sense that if you want to eradicate an invasive mammal, enlist the help of hunters. But Hawaii and other states and provinces have warned Montana that this approach backfires. Once they get a taste of feral hog hunting, many hunters begin advocating for more *feral pigs and become a constituency group. They demand that these invasive animals be managed and conserved like game animals. Because feral pigs damage crops and native habitats and kill livestock and wildlife (including deer fawns), the Montana Departments of Livestock and Natural Resources and Conservation, the lead agencies on the feral swine issue, as well as the Montana Legislature and FWP, fully support the ban on hunting feral swine. This doesn't mean tolerance for feral swine, which one USDA official has called "one of the most destructive and formidable invasive species in the United States." State officials, legislators, and the Governor's Office have made it clear there will be zero tolerance for feral pigs in Montana.*

Corrections

Several readers wrote to inform us of errors in our article "The Greatest Divide" (November-December, 2019). Lolo Pass is not on the Continental Divide as was stated, and the town of Opportunity is in fact west of the Divide and Wisdom is east of the Divide, not the other way around, as we had it. The errors are the editor's, not the author's.

Also, David Schmetterling, FWP fisheries research coordinator in Missoula, pointed out a few problems with the mottled sculpin portrait in the November-December issue: "Foremost is that what people have long called the mottled sculpin in much of the West is now referred to as the Rocky Mountain sculpin. The mottled sculpin is found in the Midwest." Schmetterling added that Montana is home to a total of six sculpin species, not three, consisting of, along with the Rocky Mountain, the Columbia slimy, deepwater, cedar, spoonhead, and torrent.

2020 photo issue contest winners



The three winners, drawn from more than 1,000 entries in our 2020 Photo Issue Favorite Contest, are **Mark Lee** of Spokane Valley, WA (Canyon Ferry WMA by Kevin League, page 26); **Ruth Hartman** of Cascade, MT (mountain lion by Ed Coyle, page 48); and **Annette Oswald** of Canova, SD (grizzly bear by Addie Ahern, page 21). Each has won a pre-mounted 16 x 20 print of their favorite photo. Thank you to everyone who entered.

Venison Carbonnade

Preparation time: 20 minutes | Cooking time: 3 hours | Serves 8

March can be bleak. Spring—with its sunny days, rising trout, and snow-free hiking and mountain biking trails—feels so close. But in Montana, March can be as cold, gray, and snowy as December. That's fine if you ski or snowmobile. For the rest of us, this is heartbreak season.

You have two choices: Stare out the window while cursing Montana's latitude, or fortify yourself against the ongoing cold and snow with a dinner so rich, savory, and luscious you forget about the drifts still piling up outside.

This rib-sticking venison stew is such a dish. It's based on one by Jonathan Miles, *Field & Stream* food columnist and author of the essential game cookbook, *Wild Chef*. In addition to venison, the recipe calls for butter, bacon, onions, brown sugar, and dark beer. You could cook a catcher's mitt with these tasty ingredients and the dish would still come out guest-worthy.

The recipe calls for venison stew meat, which comes from the shoulder, neck, or flanks. You can also make it with cubed hindquarter roast or steaks, but you'll need to greatly reduce the cooking time for those cuts—from 2 hours down to just 20 minutes.

—Tom Dickson is editor of Montana Outdoors.

Dim the lights

Darker beers are made with more heavily roasted barley than found in lighter lagers, pale ales, and pilsners. The darker roasts add chocolate, toffee, and coffee flavors that pair well with roast venison. What's considered a dark beer starts with the red ales and becomes increasingly darker as you get into the brown ales, bocks, porters, and stouts (Guinness being the most famous).

SHUTTERSTOCK

INGREDIENTS

- 3 lb. venison stew meat (elk, deer, moose, or pronghorn), cut into 2-inch cubes. Beef stew meat works, too.
- 2 T. butter
- 4 slices bacon, chopped
- 1-2 T. vegetable oil
- 3 yellow onions, chopped
- 3 T. dark brown sugar
- 4 cloves garlic, minced
- 16 oz. dark beer (see sidebar below left)
- 1 c. chicken stock
- 1 bay leaf
- 1 t. dried thyme
- 1 t. apple cider vinegar (or lemon juice)
- ¼ c. chopped parsley
- Salt and pepper to taste

DIRECTIONS

Heat a large frying pan over medium-high heat. Add butter and bacon and cook until bacon is crispy. Remove bacon and set aside.

Dry venison cubes with paper towels then salt and pepper generously. Add 1 T. vegetable oil to pan. Add one-third of the meat, to avoid overcrowding (which causes the meat to steam rather than brown). Raise temperature to high and brown on all sides. Remove to a plate. Repeat twice for the remaining meat.

Add onions and brown sugar to the pan, reduce heat to medium-low, stirring occasionally, and cook for 20 minutes. Stir in garlic and cook 2 more minutes.

Raise heat to medium-high. Add beer and scrape the bottom to dislodge the tasty brown bits, known as fond. Pour mixture from the pan into a large pot or Dutch oven (which you could use, with the frying pan, to brown the three batches of venison, to save time).

Bring to a boil and add reserved bacon, venison, and accumulated juices. Add chicken stock, bay leaf, and thyme. Reduce heat, cover, and simmer for 2 hours, stirring occasionally.

Before serving, remove cover and raise heat to medium. Simmer 10–30 minutes until liquid reaches a saucelike consistency. Stir in vinegar and parsley. Serve over dumplings, mashed potatoes, or egg noodles.

Where the public trust concept began

A defining characteristic of the United States is that it protects and conserves wildlife (including fisheries) for the common good. Canada and several other countries also steward wildlife for the benefit of all. But nowhere has the idea of wildlife as a commonly shared resource, a concept known as the public trust, been as legally and legislatively secured as it is here.

The public trust concept arrived in this country with European immigrants who came seeking freedom of religious practice and escape from a class system that gave control of land, wildlife, wealth, political power, and even thought to a privileged few. The nation's founders sought to establish a new social and political environment where everyone was granted both the opportunity to own property and the right to equitably share certain natural resources.

Recognizing its vital importance, America's founders protected private property in the U.S. Constitution, especially with the Fifth Amendment's "takings" clause, which requires the government to compensate landowners when taking their property for public use.

But the founders didn't include wildlife as part of private property, as was the case in Europe. Though later federal law allowed private ownership of coal, minerals, timber, oil, and gas, no administration or court has ever authorized the privatization of commonly shared resources like water and wildlife that move across property boundaries.

Our nation's founders sought to establish a new social and political environment where everyone was granted both the opportunity to own property and the right to equitably share certain natural resources.

"SCENE AT THE SIGNING OF THE CONSTITUTION OF THE UNITED STATES" BY HOWARD CHANDLER CHRISTY, 1940

Originating in late Roman times and later incorporated into English law, the public trust concept originally applied to waterways and shorelines. The concept was strengthened in the United States during the 19th century by three Supreme Court rulings: *Martin v. Waddell* (1842), *Illinois Central Railroad v. Illinois* (1892), and *Geer v. Connecticut* (1896). The first two rulings reinforced the idea that government is responsible for ensuring that shorelines and navigable waters are protected for the equitable use of current and future generations, with *Martin* also including shoreland wildlife (in this case, oysters) as a public trust resource. In *Geer*, the high court recognized wildlife as a public resource held and managed by the state for the benefit of all.

Land-based wildlife like deer and elk were not explicitly included with water and shorelines as public trust resources in federal law until the late 19th century. That's when Americans began realizing that seemingly limitless populations of those species, as well as bison, bighorn sheep, and pronghorn, were being hunted to near extinction. Elected officials responded to this conservation awakening by embracing a more expansive notion of the public trust to include wildlife.

The relevance of the public trust, and wildlife as part of that trust, became manifest in the late 19th and 20th centuries with a series of federal laws aimed at protecting trust resources and ensuring their equitable use. These include the Unlawful Enclosures Act (1885), Lacey Act (1900), Migratory Bird Treaty Act (1918), Clean Water Act (1972), and Endangered Species Act (1973). Montana's Stream Access Law and Stream Protection Act, as well as the Montana Constitution and guiding principles included in the North American Model of Wildlife Conservation, further bolstered the public trust concept.

As wildlife was incorporated into the public trust, state and federal leaders began recognizing the need to create conservation agencies like Montana Fish, Wildlife & Parks to conserve and manage wildlife as a trust resource at the state level.

That was FWP's original mandate, and it continues to this day.

The point of all this is that the fishing, hiking, hunting, boating, and other outdoor experiences we enjoy in Montana exists in large part thanks to widespread acceptance of the public trust concept. For the past century, Montanans and other Americans have supported a system of laws founded on the shared belief that wildlife and waters should be protected and managed for the common good, today and far into the future.

In my next director's message, I'll write about the essential role of private property and property owners in Montana's wildlife conservation legacy; the inherent tension between the public trust and private property rights; and how courts, the Montana Legislature, and Montanans themselves have attempted, for the most part successfully, to fairly and equitably resolve that tension.

—**Martha Williams**, Director, Montana Fish, Wildlife & Parks

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Grizzly bear

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THOM BRIDGE

LEGAL COUNSEL

AIMEE HAWKALUK
FWP Attorney, Helena

I'M ONE OF FIVE ATTORNEYS, along with two paralegals, who work in the Montana Fish, Wildlife & Parks Legal Unit.

I grew up in the Washington, D.C. area and earned my law degree from the University of Virginia School of Law, focusing on resource and environmental law. I was extremely lucky that a position opened at FWP, and I was hired in 2012. I still feel lucky that I get to come to work here every day.

Fishing and hiking had always been part of my life, but when I arrived in Montana I wanted to fully embrace the outdoors lifestyle. I quickly learned to hunt and am now a volunteer FWP hunter and bowhunter education instructor. I also fly-fish, backpack, and camp with my husband (a game warden sergeant here in Helena), our two-year-old daughter, and my nine-year-old stepson.

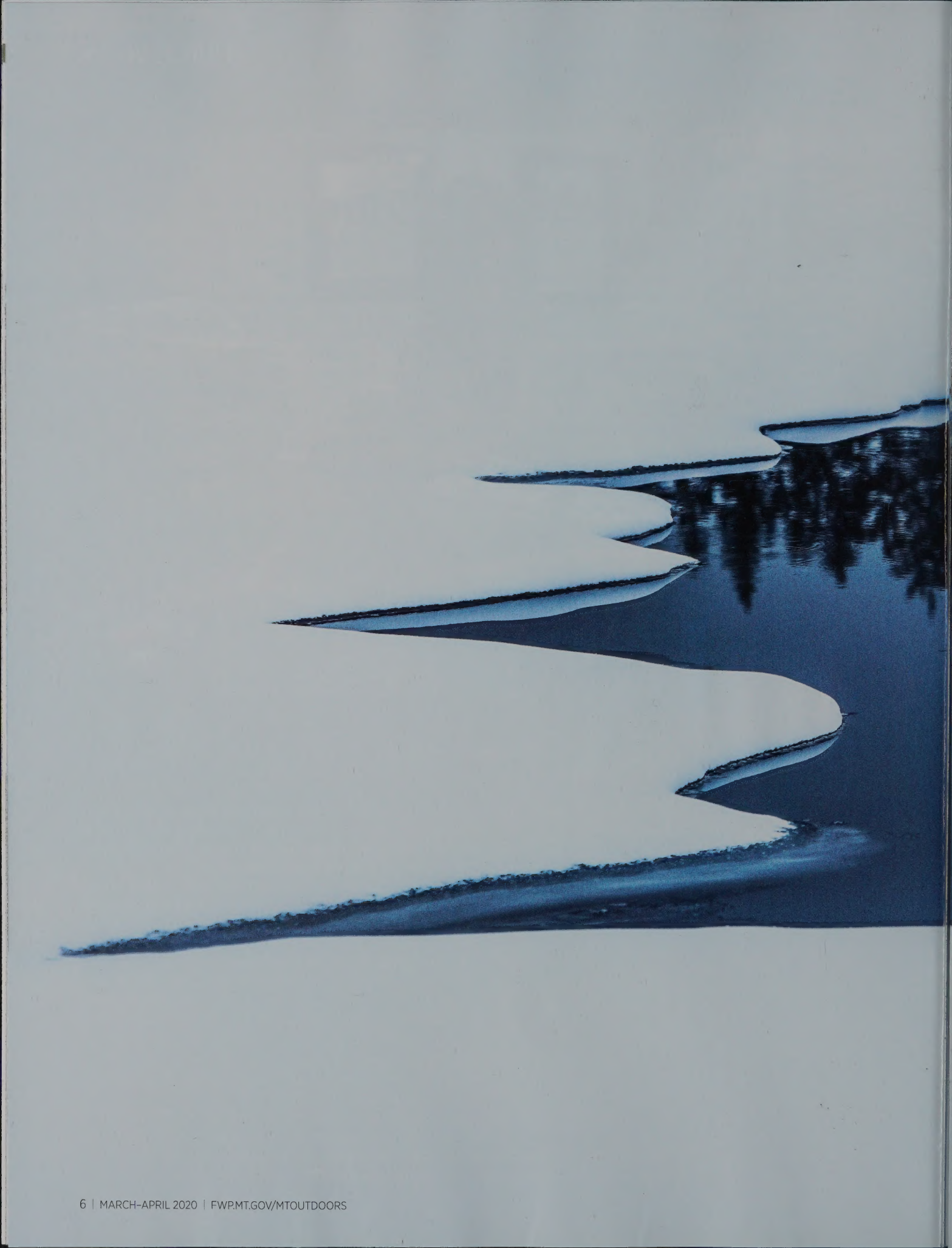
I'm part of an FWP team working on making the hunting regulations booklets more readable and easier to understand. I still remember how confusing the regulations seemed the first time I tried to figure them out. The booklets' redundant language and confusing organization didn't make things any easier.

The Legal Unit provides FWP with in-house counsel to defend the department against litigation. FWP is occasionally sued over things like public access, instream-flow water rights, and management of the resources we protect. The Legal Unit also spends time reviewing contracts for everything from printing *Montana Outdoors* to hiring crews who net bighorn sheep from helicopters.

We regularly remind our FWP colleagues that it's always better to bring us in early on an issue—no matter how small or seemingly trivial—so we can provide advice and help prevent legal problems down the road.

One thing I like about this work is that, rather than focusing on only one aspect of the law, we can be generalists with multiple areas of specialty. I've worked on personnel matters, water rights adjudication, and endangered species litigation, and have had cases before the Montana Supreme Court and Ninth Circuit Court of Appeals. We have the opportunity to work with the entire agency, as well as advise both the Fish and Wildlife Commission and State Parks and Recreation Board. It's a fascinating mix.

Best of all is the subject matter we deal with. We get to help protect what everyone in Montana cares about: wildlife, state parks, and fisheries. For an attorney who loves the outdoors like I do, this job is a dream come true.



Livingston photographer **Erik Petersen** was cross-country skiing through Red Rock Lakes National Wildlife Refuge in late winter 2019 when he spotted this reflection in an open patch of water. He took several photographs that also included the actual trees in the background, "but I liked this shot of just the reflection better because it's more alluring," he says. "In this age where people are scrolling through hundreds of Instagram shots each day, I've been trying to take photographs that ask viewers to pause a moment and look at the image more closely." ■

5 Cost, in dollars, to purchase a chance to float the Smith River with the FWP Super Permit*.

* See the FWP website for details.

TGIFF

Another reason to look forward to the end of each week: FWP's "Fisheries Friday" Instagram, Twitter, and Facebook social media postings. "The idea is to share fisheries information with the public and feature some of the biologists and technicians who do the work," says Kelsey Allison, FWP social media coordinator. The weekly posts provide fishing and biological information and touch on topics like fishing recreation conflicts, AIS updates, and late summer hoot owl closures. Proposed 2020 Fisheries Friday topics include:

- Fish migrations
- Northern pike: friend or foe?
- How to fish a prairie pond
- Meet your local fisheries biologist

Visit the latest posts on FWP's social media pages at @montanafwp.

BIRD CONSERVATION

30 years of "keeping common birds common"

It's widely known that birds need healthy habitats for nesting and raising their young. But what about the places where they spend their winters and the habitats in between?

Many (144) of Montana's 434 bird species winter in western Mexico, Central America, and points farther south. Known as neotropical migrants, these species range from ospreys and Swainson's hawks to red-eyed vireos and western tanagers.

In 1990, recognizing the need for what scientists call "full life-cycle conservation," a broad coalition of public and private conservation organizations established Partners in Flight.

"The idea behind Partners in Flight is that we need scientific data and conservation planning for birds across their entire life cycle and year-round range," Bob Ford, PIF coordinator, says.

This year marks the partnership's 30-year anniversary.

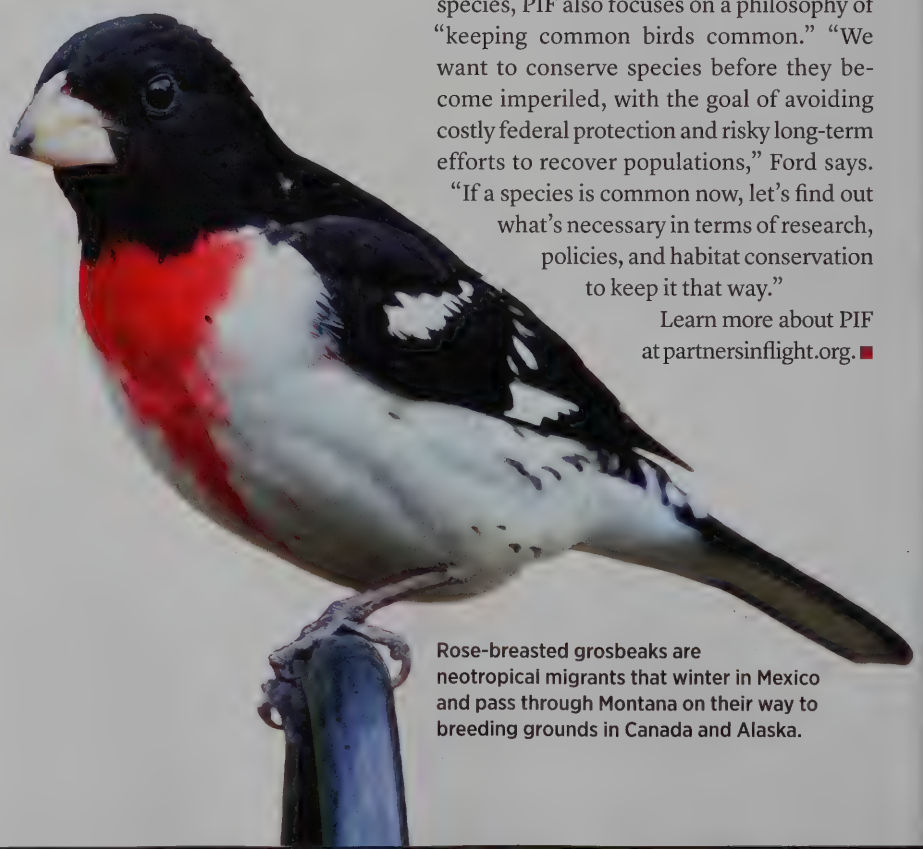
PIF's more than 150 member groups and agencies throughout the Western Hemisphere work together to develop conservation plans, conduct research, reduce bird mortality, and protect habitat. One major advancement has been to develop a way to generate simple numerical scores that rank each individual bird species according to its vulnerability and status based on distribution, population trends, threats, and regional abundance data. "States and federal governments can then use those numbers to objectively assign regional and continental conservation priorities," Ford says.

"We want to conserve species before they become imperiled."

The partnership assesses more than 400 North American birds and compiles an annual "Watch List" of species deserving the greatest attention. "Birds like Montana's chestnut-collared longspur require immediate and coordinated actions across their full range and life cycles to reduce threats, reverse declines, and prevent future extinctions," Ford says.

While shining a light on high-risk species, PIF also focuses on a philosophy of "keeping common birds common." "We want to conserve species before they become imperiled, with the goal of avoiding costly federal protection and risky long-term efforts to recover populations," Ford says. "If a species is common now, let's find out what's necessary in terms of research, policies, and habitat conservation to keep it that way."

Learn more about PIF at partnersinflight.org. ■



Rose-breasted grosbeaks are neotropical migrants that winter in Mexico and pass through Montana on their way to breeding grounds in Canada and Alaska.

OUTDOOR RECREATION

New state outdoor recreation plan unveiled

The state of Montana has recently released its latest Statewide Comprehensive Outdoor Recreation Plan (SCORP). Containing agreed-upon priorities, the document will help state, federal, and municipal agencies make decisions when managing camping, fishing, hiking, hunting, wildlife watching, and other outdoor recreation over the next five years. "This new plan addresses how Montana can enhance the outdoor recreation assets that sustain our economy and support outdoor opportunities for all," Governor Steve Bullock says.

Read the new SCORP at stateparks.mt.gov.

The release of SCORP comes on the heels of a recent report by the U.S. Bureau of Economic Analysis showing that Montana ranks second in the nation in the percentage of its GDP—5.1 percent in Montana—that is tied to the outdoor recreation economy.

The 2020-2024 SCORP was developed by Montana State Parks, a division of Montana Fish, Wildlife & Parks, with guidance from an advisory committee with members representing local, state, tribal, and federal agencies; business interests; and outdoors advocacy organizations. FWP and committee members conducted public meetings statewide to solicit opinions from a wide range of Montanans.

The document identifies six high-level goals and recommendations:

- Promote outdoor recreation opportunities for all Montanans.
- Enhance public access to outdoor recreation resources and facilities.
- Support the economic vitality of communities and the state.
- Improve quality of life through outdoor recreation experiences.
- Adapt outdoor recreation for a changing environment.
- Honor Montana's outdoor legacy.

"Given the growing pressures on the resources that sustain all outdoor recreation and associated economic activity, we need to regularly revise and update Montana's guiding document for outdoor recreation management," Martha Williams, FWP director, says.

SCORP also fulfills a federal requirement that every state complete a statewide plan to be eligible for funding from the Land and Water Conservation Fund (LWCF). Since 1965, Montana has received $38 million from this federal program for outdoor recreation projects in Montana communities. Montana State Parks administers the LWCF for Montana.

"Because it includes such a wide range of outdoor experiences, from mountain biking and snowmobiling to bowhunting and fly-fishing, the new SCORP also reinforces FWP's role as a leader in managing Montana's outdoor experiences," Williams says. "That recreation diversity also reaffirms this department's mantra that 'The Outside Is In Us All.'" ■

CLOCKWISE FROM TOP LEFT: CHUCK HANEY; LUKE DURAN/*MONTANA OUTDOORS*; MONTANA STATE PARKS

Montana Outdoors goes to school

FWP recently began a new education program that uses *Montana Outdoors* to improve student literacy and critical thinking skills in Montana middle and high school classrooms. For one or two articles in each issue, FWP provides a literacy evaluation assessment worksheet, developed by a middle-school teacher and department education specialists. Some assessment worksheets include additional science or math activities.

"We want to use our popular magazine to encourage students to read and think critically about science involving wildlife and other natural resources right here in Montana," says Laurie Wolf, interim chief of the FWP Education Bureau.

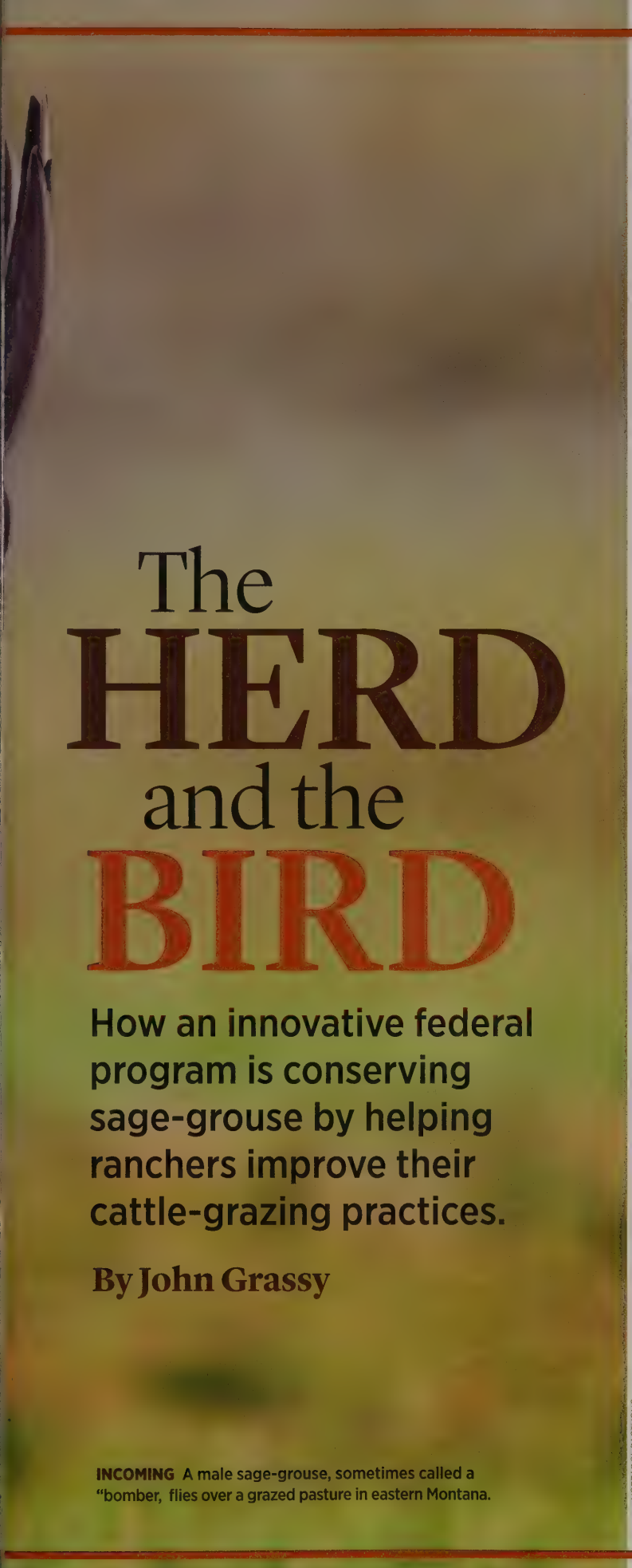
The worksheet for a recent article on a moose study asks students to identify, among other components, the biologists named in the article, the aims of the study, and what scientists learned when they used GPS collars to track moose. For an article on swift foxes, students are asked to identify the correct population size, the differences between swift foxes and red foxes, which counties have the highest swift fox population densities, and other story elements.

Teachers seeking information on the program or to sign up to receive the assessments for their students can contact Wolf at LWolf@mt.gov or (406) 444-9945. ■

The HERD and the BIRD

How an innovative federal program is conserving sage-grouse by helping ranchers improve their cattle-grazing practices.

By John Grassy



INCOMING A male sage-grouse, sometimes called a "bomber, flies over a grazed pasture in eastern Montana.

NOPPADOL PAOTHONG

In 2012, Bret and Kim Lesh were trying to solve water problems on a new 9,000-acre addition to their Cross W Ranch. Like all ranches in eastern Montana's Carter County, their business was subject to the yearly calculus of snow, rain, temperature, and wind. In the spring of a good year, native plants like western wheatgrass, blue grama, and buffalograss thrive amid the blue-gray sagebrush. Snowmelt and rain fill small reservoirs and excavated pits that serve as water sources for cattle, which grow fat on the dense stands of native vegetation. Mule deer, pronghorn, prairie songbirds, and other native wildlife also thrive on the lush plant growth. But that's in a good year, maybe three years out of five. The Leshes needed to figure out how to keep the cattle on their new property fed and watered during the other two.

Bret Lesh visited the USDA Natural Resources Conservation Service (NRCS) office in Ekalaka that spring seeking help from Rebecca Knapp, the NRCS district conservationist. To his surprise, she said the solution to his water dilemma might lie, in a roundabout way, with the greater sage-grouse.

PRESERVING STRONGHOLDS

Lesh was familiar with sage-grouse. Like other Carter County ranchers, he sees the big prairie birds most days. Yet across much of the species' historic western range, populations are declining. As numbers dropped to worrisome lows in Nevada and Utah, scientists documented the species' remaining strongholds in parts of Montana and Wyoming. In a federal sage-grouse management plan, southern Carter County—"Core Area 13" in bureaucrat-speak—was identified as containing some of the nation's healthiest populations and habitats.

Knapp told Lesh about an NRCS program launched the previous year in response to sage-grouse declines across

TIGHT TEAM Ranchers Kim and Bret Lesh with NRCS district conservationist Rebecca Knapp at the Leshes' Cross W Ranch in Ekalaka.

the West. The national Sage-Grouse Initiative (SGI) is an incentive program for private landowners who commit to improving grouse habitat on their property and changing grazing management to benefit the birds. The initiative is the largest—though by no means the only—sage-grouse conservation effort in Montana and across the West (see "Cooperation is key" on page 15).

If the Leshes were willing to carry out a conservation plan that benefited both livestock and sage-grouse, Knapp said, the SGI could provide federal funding to help both the cattle and the native birds on the ranch.

WHERE'S THE WATER?

In Carter County, as in so much of the West, finding a reliable source of clean water for cattle is a challenge as old as ranching itself. The aquifer beneath most of Core Area 13 is 1,700 to 3,000 feet belowground. With drilling costs of roughly $30 per foot, installing new wells is an expenditure most stockgrowers can't afford.

Early ranchers dug shallow pits to capture snowmelt and rain. With several pits across their properties, ranchers could usually collect enough water to get their herds through most summers. The system still works in years of decent precipitation. But during dry, hot years—those two out of five—smaller pits and reservoirs evaporate. Ranchers often end up with just one or two places to water cattle until fall and must move cows to pastures near these sites. The stationary herds start eating the forage and, over several weeks or longer, graze it down to dirt.

Lesh owned a few wells, and he told Knapp he wanted to use water from one to stock additional tanks via a network of pipelines. The tanks would be installed across the new 9,000-acre property to give each pasture its own source of fresh water. With these improvements, he could move cattle from pasture to pasture. This would allow native forage time to recover from grazing before being grazed again.

That's where the sage-grouse come in.

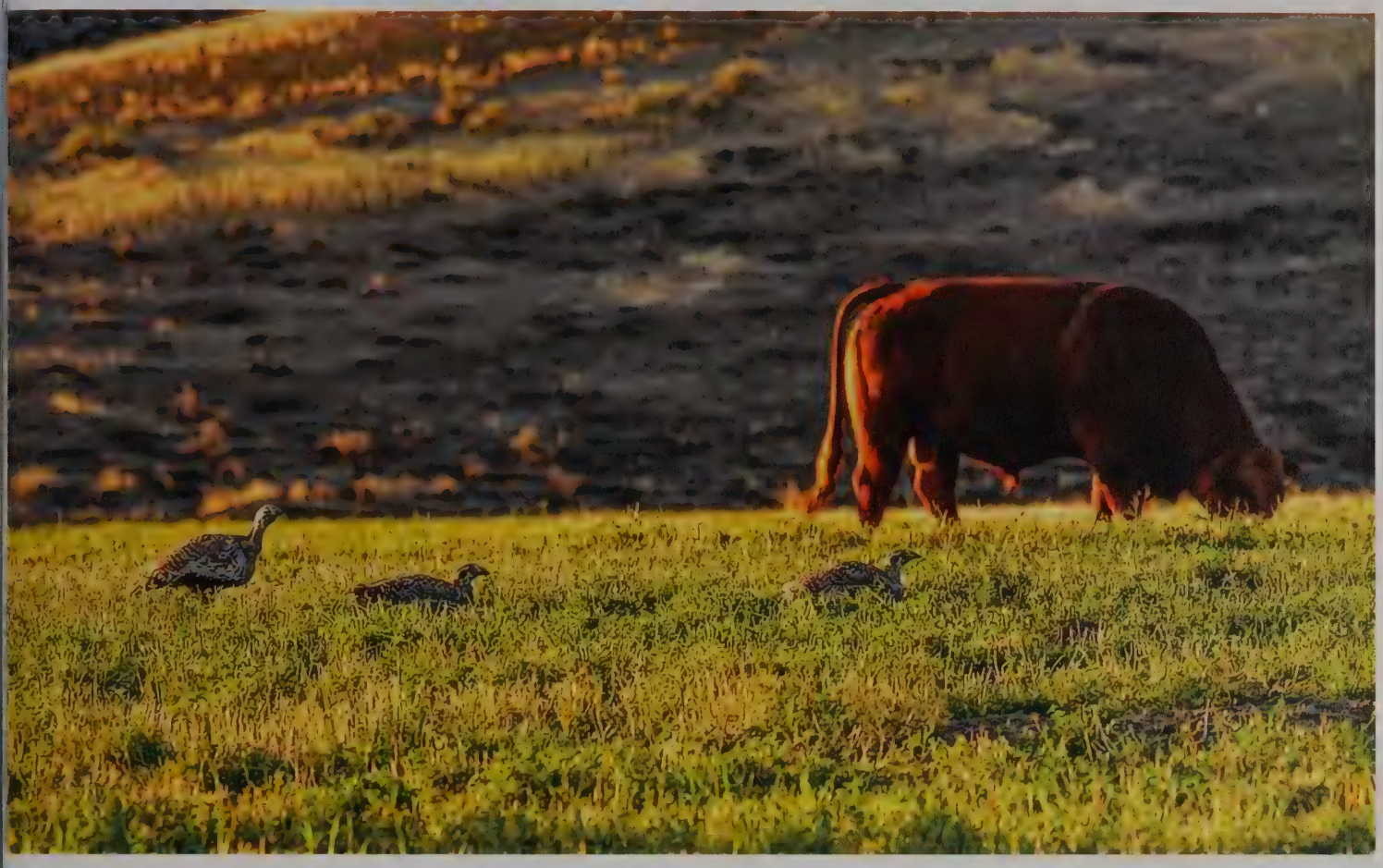
TAKE ONLY HALF

Though too much grazing can harm native plants and wildlife, some grazing can actually help. Grasses and forbs adapted over thousands of years to herds of bison trimming their tops. If not grazed at all, plants become choked out by the thatch of their own leaves left from previous years. The rule of thumb many Montana ranchers use to manage grazing in a way that sustains this historical ecological process while keeping cattle fed is to "take half and leave half."

"Studies show that grasses in this area make twice as many leaves as they need because they 'know' that something is going to eat some of their leaves," says Kami Kilwine, NRCS rangeland management specialist in Miles City. "Plants are quick to recover from grazing when half or fewer of their leaves are removed."

When new grass emerges on the Leshes' rangeland in May, the bright green growth is partially obscured by a foot-high cover of dry, tan residual grass. This is the portion of last year's crop that went ungrazed, and it can be essential for sage-grouse survival.

John Grassy is a public information officer with the Montana Department of Natural Resources and Conservation.



SHARING SPACE Sage-grouse hens look for insects near a grazing bull, showing how the two species can coexist in healthy range.

Early each spring, male and female sage-grouse gather in open areas called leks to conduct a mating ritual. To attract females, males strut while inflating and deflating their yellow, eggplant-size air sacs to produce a loud burbling sound that can be heard miles away.

After mating, the hens disperse one to four miles from the breeding leks to nest. Residual standing grass provides warm areas during chilly spring weather where hens can sit and incubate their eggs. It hides adult grouse and chicks from golden eagles and other predators. The leftover vegetation also produces lots of insects, a key food for rapidly developing chicks.

> "Over and over I hear ranchers say they've got to leave some grass. It's a wonderful ethic."

In 2009 Melissa Foster, a Montana Fish, Wildlife & Parks wildlife biologist, led a four-year study of sage-grouse in Core Area 13. Researchers captured 94 hens, fitted them with radio collars, and logged their movements throughout the year. The study aimed to document the effects of grazing on the birds' nesting success. It's one of several FWP research projects conducted in cooperation with NRCS to evaluate the potential costs and benefits to sage-grouse of various land management recommendations made by the SGI.

An initial hypothesis for the Core Area 13 study was that sage-grouse would have lower nesting success rates in pastures with cows than in pastures without. But in Foster's study, nesting success was actually higher in pastures with active grazing than in pastures lacking livestock (59 percent compared to 38 percent). "It was just one study," the biologist says, "but it shows that, at least in some cases, livestock grazing can definitely be compatible with sage-grouse conservation."

The reasons for the differences in that study aren't known. One theory is that grouse predators avoid areas with cows. Regardless of why, the study adds to the results of other research that seems to indicate a beneficial relationship between cattle and sage-grouse. Researchers have found that sustainable rangeland management practices, like leaving residual cover and rotating grazing to reinvigorate native plant growth, can benefit livestock while maintaining the habitat that wildlife, including sage-grouse, require.

In other words, what's good for the herd can be good for the bird.

HABITAT MAPS

Using funds from the federal Farm Bill, the SGI shares costs with participating ranchers for new fencing and water sources to graze cattle more sustainably. "Many ranchers want to improve their grazing systems. But they usually don't have ready cash to pay for wells and to pipe water across the landscape, which is necessary to move cows around more," Knapp says.

As Knapp's team developed a sage-grouse conservation plan with the Leshes for the Cross W Ranch, they used data from Foster's study, which mapped the different habitat

ALL THE ELEMENTS Left: Melissa Foster, FWP wildlife biologist in Baker, led a four-year study showing which habitats sage-grouse use throughout the year. The study helped guide a grazing conservation plan the Leshes are now using on their ranch to conserve the prairie birds. Top left: Recently hatched sage-grouse chicks can hide from predators beneath sagebrush and residual standing grass. Top right: Insect-rich mesic (wet) areas like this one running through the Cross W Ranch in Carter County are essential summer habitat for rapidly growing sage-grouse chicks. Right: The federal Sage-Grouse Initiative shared costs with the Lesh family to install pipeline and watering tanks to keep cattle away from sensitive mesic areas and prevent them from overgrazing range.

types that sage-grouse use throughout the year. "Those results were essential in helping us figure out where fencing should go to protect critical habitats from overuse by cattle," Knapp says. The resulting plan addressed the Leshes' top priority of providing reliable water for grazing rotation and included conservation objectives like improving plant density and overall forage production, decreasing areas of soil erosion created decades earlier from livestock crowding in creek bottoms, and maintaining and enhancing habitat for sage-grouse, mule deer, and pronghorn.

The plan also called for removing 5.5 miles of woven mesh fencing, a hazard for sage-grouse and other wildlife. The old fencing was replaced with four-strand barbed wire outfitted with plastic reflectors, each the size of a playing card, clipped to the top strand several yards apart. Sage-grouse often die after colliding with wire fences while flying low to and from their breeding grounds, and the reflectors have proved to reduce collisions. The four-strand wildlife-friendly fencing also enables mule deer and pronghorn to slide underneath the bottom strand, avoiding injury from snagging the top wire while leaping.

The Leshes' new property came with several wet "mesic" areas vital to sage-grouse chick growth. These low-lying swales gather water that runs off uplands. In late summer, when upland habitats are baked dry, hens lead their chicks to these prairie oases, which are shaded by lush plant growth and filled with insects. The Leshes' new stock tanks and grazing areas were sited to keep cattle away from these critical habitats as much as possible.

The conservation plan also calls for using rotational grazing. That means cattle are allowed to eat grass for shorter periods in specific areas while other pasture is rested.

After doing rotational grazing for three years, Lesh is sold. "It flat-out works," he says. "It lets plants grow and build their root systems so they can withstand a lot more of the hot and dry conditions when it doesn't rain." He estimates that better grass production and improved access to water from the new piping system add 30 to 50 pounds to each of the ranch's yearling cows during the growing season. The enhanced conditions also attract wildlife. "Antelope and mule deer were nonexistent on the place when I took it over," Lesh says. "Now I'll see 200 to 300 antelope during their migration, and lots of mule deer."

Lesh says he and his wife were so pleased with the SGI program and the help they received from the NRCS and the Carter County Conservation District—which helps represent ranchers in dealings with federal farm programs—that they entered into a second conservation and grazing agreement program on another ranch unit. "With the first agreement, I had concerns about how big of an anchor they were going to tie around my neck in terms of what I could and couldn't do," he says. "But I quickly found out that wasn't the case at all."

And that's what Lesh told neighboring ranchers who asked him how the SGI might share costs for wells, fencing, piping, stock tanks, and other infrastructure to help cattle and sage-grouse on their operations. To date, eight years after the Leshes broke the ice,

dozens of Carter County landowners have entered into 49 SGI cost-share agreements.

THE MORE, THE BETTER

Foster, the FWP wildlife biologist, says she welcomes every new SGI agreement. "Sage-grouse use a big landscape, with some of our hens making seasonal movements of up to 30 miles between summer and winter ranges," she says. "The more well-managed grazing we have out there, the better."

Foster notes that FWP strongly supports maintaining well-managed "working lands" as essential for wildlife conservation. "Many of our wildlife management areas statewide allow managed grazing for the same reasons it's supported by the SGI," she says.

But even in landscapes where cattle and sage-grouse coexist, the birds face growing threats. Biologists estimate sage-grouse populations by counting the birds each spring on their breeding leks. When numbers drop, the cause could be habitat degradation or human-caused disturbances many miles away. Scientists have found that bird numbers dwindle in areas where a new oil rig, cell phone tower, or wind turbine goes up within five miles of a breeding lek. The causes aren't fully understood, but biologists suspect that the new structures provide perching sites for golden eagles and the truck traffic on roads bothers sage-grouse and disrupts breeding.

Foster says a region of heavy energy development in Fallon County northwest of Baker still retains a few leks where male sage-grouse dance next to pump jacks or main roads. "I can't tell you how many times I've been told they're living proof that oil-field development doesn't bother sage-grouse," Foster says. "But when you look at lek counts for that area, there's a long-term downward trend." That's worrisome, especially as energy development continues to grow across eastern Montana.

Fortunately, sage-grouse continue to thrive in Carter County, next door. There and elsewhere in Montana, the SGI and other programs are helping forward-thinking stockgrowers sustain both cattle and healthy sage-grouse populations. "Key to all this is that these ranchers are managing their lands for the long-term," Foster says. "These are well-established families that have been through generations of drought and learned how to care for their land. Over and over I hear ranchers say they've got to leave some grass. It's a wonderful ethic."

Cooperation is key to keeping sage-grouse management in state hands

Montana almost lost state management authority for the greater sage-grouse in 2015. The species was being considered for threatened or endangered status under the federal Endangered Species Act. That would have transferred management authority to the federal government. It never happened, however, thanks in large part to the emergence of a strong conservation partnership focused on sage-grouse that began long before the threat of federal listing.

For years Montana agencies, organizations, industries, and farming and ranching groups have worked together to create programs, funding, and policies that improve private land stewardship and help maintain sagebrush ecosystems and sage-grouse populations. The work got an exta boost in 2013 when Governor Steve Bullock launched the Montana Sage-Grouse Habitat Conservation Program, which uses state funds to improve habitat and reduce habitat loss on projects requiring state permits.

Montana Fish, Wildlife & Parks provides state leadership on sage-grouse population monitoring, research, and strategic habitat conservation. The Bureau of Land Management helps with monitoring and conducting research and by maintaining sage-grouse habitat on the agency's federal lands through its land-use decisions. The U.S. Fish & Wildlife Service works closely with the Natural Resources Conservation Service and other partners to provide tools to private landowners interested in conserving sage-grouse habitat. The Nature Conservancy helps enroll private landowners in federal Candidate Conservation Agreements with Assurances, which would protect landowners who enact certain conservation provisions if the sage-grouse were federally listed in the future.

The Montana Association of Conservation Districts helps landowners apply for NRCS programs for sage-grouse and sagebrush rangelands. The Montana Association of Land Trusts, Montana Land Reliance, The Nature Conservancy, and FWP buy conservation easements in sage-grouse country. Local producer groups, such as the Rancher's Stewardship Alliance and Winnett ACES (Agricultural Community Enhancement and Sustainability), support sustainable range management practices and local economies in sagebrush regions. Energy and utility companies work with the Montana Sage-Grouse Habitat Conservation Program to reduce and compensate for damage to sage-grouse habitat caused by energy development.

"This collective approach makes Montana's sage-grouse conservation a model for western states," says Ken McDonald, head of the FWP Wildlife Division. "But we need to keep working together to show that we can take care of sage-grouse while allowing for sustainable economic development. If we don't, we could someday see the bird listed under the Endangered Species Act."

—Catherine Wightman, FWP Wildlife Habitat Program and federal Farm Bill coordinator

Welcome Back, Stranger

Seeing the American robin again for the first time. By Emma Marris

There are approximately 50 American robins in my front yard, a noisy, colorful flock centered on my crab apple tree. They have been partying for at least 24 hours, gorging themselves on the fruit and singling lustily.

These festive aggregations are a common feature of spring throughout the United States as the birds migrate north. Robins are big, colorful thrushes that do well in our current human-dominated era. They like the same sorts of habitats we do: lots of grass and a few trees and shrubs. The expanding suburban landscape has increased their numbers in the last several decades.

We often mistake rarity for value and disdain the common. Robins are sometimes victims of this reflexive snobbery. I too have caught a bird in the corner of my eye, only to turn away once I identified it as "just a robin." So in celebration of the flock that is visiting me, I looked up American robins in four bird books: one from 1827, one from 1922, one from 1988, and one from 2019.

"The first land-bird seen by me, when I stepped upon the rugged shores of Labrador, was the Robin, and its joyful notes were the first that saluted my ear," writes John James Audubon in 1827's *Birds Of America*. He then goes on to be disappointed that "numberless Indians" did not at once spring out of the woods to be his volunteer guides to the natural history of North America. Returning to the robins, Audubon tells us about their migratory flocks in March, adding, "Several persons may at this season stand round the foot of a tree loaded with berries, and shoot the greater part of the day, so fast do the flocks of Robins succeed each other. They are then fat and juicy, and afford excellent eating." Back then, people ate robins on toast! The idea seems faintly disgusting now. But appreciating their flavor was not incompatible with appreciating them when alive. "Every one knows the Robin and his song," Audubon writes. "Excepting in the shooting season, he is cherished by old and young, and is protected by all with anxious care."

Emma Marris, author of Rambunctious Garden: Saving Nature in a Post-Wild World, *lives in Oregon. The original version of this essay was published on the science blog* The Last Word on Nothing.

Robins are sometimes victims of this reflexive snobbery. I too have caught a bird in the corner of my eye, only to turn away once I identified it as "just a robin."

With his 1861 children's poem *Robin Redbreast*, the Irish poet William Allingham created confusion over the robin's plumage that has lasted ever since. In 1922's *Western Birds*, author Harriet Williams Myers tried to set the record straight by pointing out that the robin's breast is "by no means red" but actually a sort of brick-orange. Fair enough. Myers also says they are among the earliest spring arrivals to the West Coast, "enlivening the dreary month of March by their songs." Myers bemoans that robins were, in her day, still frequently mown down in large numbers by market hunters. She expresses a hope that passage of the Migratory Bird Treaty Act, just four years earlier, will end the "needless slaughter of our Robins." And lucky for all of us, it did.

In 1988's *The Birder's Handbook* by Paul Ehrlich, David S. Dobkin, and Darryl Wheye, we learn that the robin often has two rounds of chicks each year, sometimes three. Though adults love fruit, they feed their nestlings primarily insects. (It is for this reason that having a messy yard and planting native species that insects like is arguably better for birds than putting out seed. Many baby birds need high-protein insects to thrive.) The book also mentions a post–Migratory Bird Treaty Act threat to the species: spraying DDT to combat Dutch elm disease in the 1950s. Luckily, robins came through that as well.

In 2019's *How to Know the Birds* by Ted Floyd (for which I provided an enthusiastic blurb), robins are the second bird introduced to the reader. Floyd challenges our reflexive dismissal of the species as ordinary and unremarkable. And indeed, now that we know all they have been through, their easy abundance today seems all the more wonderful. "The robin is one of the truly marvelous birds of our continent," Floyd writes. "The migrations of robins are stirring; their adaptability to different habitats is staggering; their easily observed family life is endlessly fascinating and, with no apologies for sentimentalism, heartwarming."

Soon the merry revelers outside my window will pair up, build nests, breed, and lay three or four of the most beautiful eggs in the world, a blue so striking that we have named the color after it: robin's egg blue. Note that finding a broken blue egg on the ground does not mean tragedy has occurred; the mother robin often pitches the

ILLUSTRATION BY SIAN FELLOWS

shells out of the nest after her young have hatched. But not all nests are "successful"—rates vary from place to place. If a baby robin makes it to adulthood, it may live up to 13 years, flying north and south, partying and breeding and parenting—a nice long life for a songbird. Albatrosses can make it to 40, and they look like wise elders from the moment they lose their juvenile plumage. Robins don't live nearly as long, nor look nearly so serious. They sing and gorge themselves on fruit and wrestle together in the treetops. They seem to be having a pretty good time. They are common but astonishing. I am so glad they didn't all end up on toast, and that they are flourishing in my front yard. I feel honored by their visit.

Robins sing and gorge themselves on fruit and wrestle together in the treetops. They seem to be having a pretty good time.

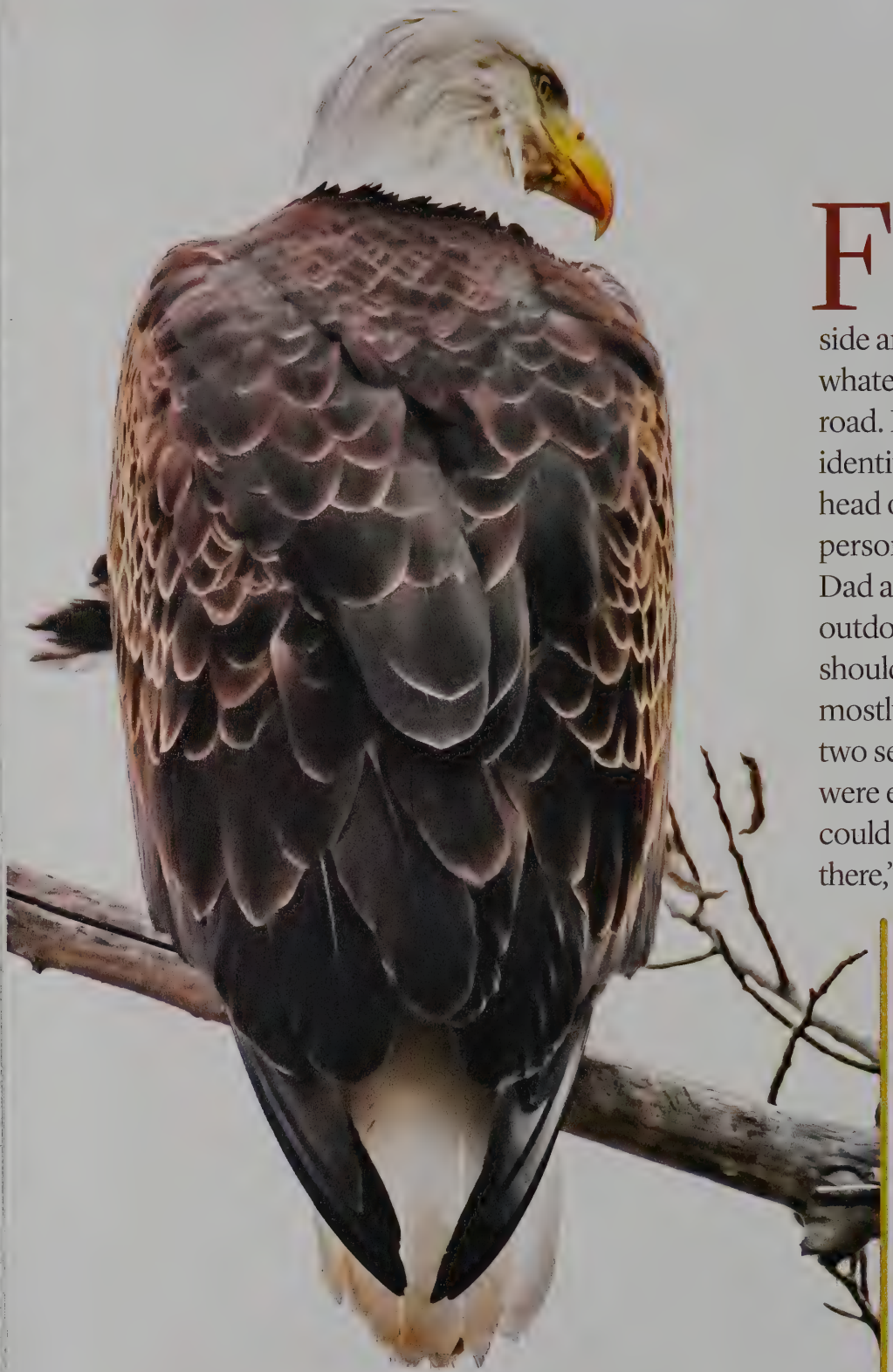
In Montana, robins arrive each spring in March and April and return to Mexico from September through November. Some robins stay in Montana all winter in residential areas, especially if temperatures stay moderate. According to the North American Breeding Bird Survey, robin numbers in Montana are steadily growing.

GOOD ENOUGH GUIDE

16 RAPTORS That Every Montanan Should (Kinda) Know

The "good enough" guide to identifying birds of prey **BY TOM DICKSON**

Rough-legged hawk
photo by Carol Polich



The word "raptor" comes from the Latin *rapere*, meaning "to seize or plunder." Raptors are technically birds that kill other animals for food with their powerful talons. These winged carnivores are grouped into several categories: **Hawks** are broad-winged raptors classified either as **buteos**, which have larger, rounded wings and shorter tails, or as **accipiters**, which are smaller and have shorter wings and longer tails. **Falcons** are raptors with long, pointed wings and narrow tails. **Eagles** are the largest raptors.

For years, whenever I'd visit my dad for a few days, we'd take an afternoon drive in the countryside and look for deer, waterfowl, or whatever else we could spot from the road. Invariably, we'd puzzle over the identity of a bird of prey soaring overhead or perched on a fence post. "A person ought to know his raptors," Dad always said. He meant that any outdoorsperson worth their salt should be able to identify these mostly large, conspicuous birds. As two self-professed nature lovers, we were embarrassed that so often we could not. "Some kind of raptor up there," we'd conclude before driving on.

A few years ago, I decided to learn to identify Montana's 16 most common raptors. For help I turned to local experts: Amy Seaman, director of policy and science for Montana Audubon; Bob Martinka, bird photographer and retired Montana Fish, Wildlife & Parks deputy director; Steve Hoffman, then the executive director of Montana Audubon; and Kate Davis, director of the Raptors of the Rockies conservation and education center in Florence. I also consulted several bird books, including *Birds of Montana,* by Jeffrey Marks, Paul Hendricks, and Dan Casey; *Montana Bird Distribution* by P.D. Skaar; *The Sibley Guide to Birds*; and *The Crossley ID Guide: Raptors*, as well as the Cornell Laboratory of Ornithology's online "All About Birds" website.

As I spent time with the raptor experts, I learned that even they can't always agree on what's flying overhead. Cooper's hawk or

Tom Dickson is editor of Montana Outdoors.

KIMBERLY FRENCH

sharp-shinned? Golden eagle or immature baldy? Small peregrine falcon or large merlin? One February morning, I listened as Martinka and Hoffman spent 30 minutes good-naturedly arguing over whether a distant hawk in a tree was a red-tail or an immature rough-legged.

I soon realized that a goal of definitively identifying raptors was unrealistic. Instead I'd aim for "good enough" identification. In other words, based on a handful of factors—time of year, location, wing or head shape, silhouette, flying style, and coloration—I'd make my best guess and be satisfied with that. After some study and practice, I learned that a robin-size raptor hovering over a field is likely a kestrel. A half-dozen large, dark raptors soaring off a cliff in midsummer are probably turkey vultures. A narrow-winged raptor with "broken" wrists soaring over a trout river is usually an osprey.

I still can't identify many raptors. Too often they appear only as "dot birds"—dark specks in the sky—or airborne blurs as I drive along the highway. But I've found that if I pull off the road, use binoculars to watch a raptor for a few minutes, and, especially, get close enough to see it perched, I'm able to at least narrow down the possibilities and make a decent guess.

Just the other day while driving near Lewistown, I spotted a raptor soaring low over a field, teetering from side to side. The slim, narrow wings were a clue it wasn't one of the broad-winged buteo hawks. It was too large to be a merlin or kestrel. Though it could have been a prairie falcon, the plumage was too dark for that light-colored species. Then it turned away and briefly exposed a white butt at the base of a narrow tail. The sun was partially in my eyes so I couldn't identify it for certain, but I felt okay taking a "good enough" guess and calling it a northern harrier.

Identifying features

CLOCKWISE FROM TOP RIGHT: LEE NELSON; JASON SAVAGE; KEN ARCHER; CAROL POLICH (RED-TAILED HAWK)

Note: This guide doesn't cover immature raptors, which often have markedly different coloration from adults; the dark and light "phases" of some species; and the sometimes stark differences between males and females of some species ("sexual dimorphism"). Also, though owls are raptors, we're not including those birds here but will cover them in a future guide.

Buteo hawks

(Broad, rounded wings and short tails)

RED-TAILED HAWK

This is one of Montana's most common and easily identified raptors, even without seeing it. The red-tail's recognizable primal *kee-eer* scream is what you hear in movies any time a scene shifts to the great outdoors. In flight, this large, barrel-chested raptor shows a square head and broad wings and tail. The tail is red-orange above and pale red-orange below. Other plumage ranges from light to dark, but the bird usually shows a dark band between a light chest and belly. Red-tails are regularly seen in all seasons. During warmer months they often soar on thermals, making wide circles with occasional stiff, heavy wingbeats.

When: Year-round

Where: Statewide, but more common in western and south-central Montana, near prairies, pastures, forest edges, and open residential areas.

ID tips:

- Red-orange tail above and below.
- Square head and long wings, dark leading edge to the wing lining in flight.

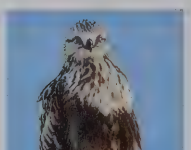
Behavior tip: Often seen perched on utility poles or in large trees, or soaring overhead.

Up-close tip: On a perched bird, look at the back shoulders (scapulars) for the white-speckled V or, on the front, the dark band between the pale chest and belly.

Often mistaken for: Rough-legged hawk in winter.

ROUGH-LEGGED HAWK

If it's winter and you see a large raptor hovering over a field, a pasture, or wheat stubble, or perched on a power line, you can bet it's most likely a rough-legged hawk.



Most other raptors have long since headed south from Montana for the winter, but rough-leggeds spend summers in the Arctic and Alaska feeding on lemmings, then migrate south to Montana to hunt meadow voles. If you're not entirely sure it's a rough-legged, look for the square brown "wrist" patch on the pale underside of each wing.

When: Winter.

Where: Statewide, in open grasslands.

ID tips:

- Large head, long wings, dark belly.
- Square brown "wrist" patches on pale underside of wings.
- White rump patch (with small patch of dark feathers near body) and dark tail band.

Behavior tips: Hovers in place over fields like a kestrel. Due to small feet, perches on power lines and small limbs as well as fence posts.

Up-close tip: Small bill and small feet, with legs feathered down to the toes.

Often mistaken for: Red-tailed hawk.

FERRUGINOUS HAWK

You'll spot this big, light-colored raptor during warmer months cruising low over grasslands and sagebrush mainly east of the Continental Divide. Pronounced *ferr-RUE-jin-us*, the ferruginous hawk shows more white than any other buteo, especially when seen from below. The overtail and overwings are rust-colored—hence the "ferr," Latin for iron (rust), in the name.

When: Summer.

Where: Mainly east of the Divide, in grasslands and sagebrush prairie.

ID tips:

- Large raptor with pointed wings and a large head.
- Large feet, feathered legs down to the toes.
- Shows more white than other buteos.
- Dark legs form a brown V on undersides, easily seen in flight.
- White undertail, white to rust-red overtail.
- White underbody and white underwings (showing dark wing "commas") with rust-red overwings.

Behavior tip: Cruises low over grasslands.

Up-close tip: Yellow corners of the mouth extend far back on the head.

Often mistaken for: Prairie falcon, northern harrier.

SWAINSON'S HAWK

This is one of only two raptors in Montana with dark flight feathers (rear) that contrast with the light front wing lining. With all others (except the osprey), it's the other way around. This slim, mid-size raptor cruises low over grasslands and farmlands during warmer months, teetering from side to side like a northern harrier, its pointed wings extended in a shallow V (dihedral). If the bird is perched, look for the dark head and shoulders, and the brown "bib" on the chest.

When: Summer.

Where: Statewide but mostly east of the Divide, in grasslands, farmlands, and sagebrush prairie.

ID tips:

- Elegant raptor with long, pointed wings and long tail.
- Dark rear underfeathers and light front underfeathers.

Behavior tip: Cruises low over grasslands with wings held in a shallow V, teetering from side to side.

Up-close tip: Perched birds show a brown "bib" on the upper chest, with a light or barred belly.

Often mistaken for: Prairie falcon, northern harrier, ferruginous hawk, red-tailed hawk.

CLOCKWISE FROM TOP LEFT: JASON SAVAGE; JESSE LEE VARNADO; TRACY SCOTT; DONALD M. JONES; BOB MARTINKA; SHARON DEWART-HANSON; DONALD M. JONES; DUANE HUIE; LEE NELSON

Accipiter hawks

(Short, broad wings and long tails)

SHARP-SHINNED HAWK

Sharp-shins are Montana's smallest hawk (kestrels, which are a bit smaller, are falcons). These robin-size raptors are found mostly in dense conifer forests. In winter, many move to wooded urban areas to pick off chickadees and house finches hanging around feeders. If you live in town and see a small raptor zooming after songbirds, there's a good chance it's a sharpie.

This raptor is often mistaken for the larger but similarly marked Cooper's hawk, which shares the same habitats. Look at the tail: The sharp-shin's is shorter and squared off (memory tip: The two esses in "sharp-shin" correspond to the two esses in "shorter" and "squared") while the Cooper's is longer and rounded.

When: Year-round.

Where: Statewide except the north-central and northeastern regions, in dense conifer thickets in summer, and in urban areas (especially near bird feeders) in winter.

ID tips:

- Small, robin-size raptor with long, thin legs.
- Both male and female have dark gray overwings and body and a rufous belly with white barring.
- Smaller head compared to the Cooper's. In flight silhouette, looks like a capital "T."
- When flying, rapid wingbeats are almost too fast to count and are interspersed with short glides.

Behavior tips: Often seen in urban areas zipping through trees with quick bursts of speed while pursuing small birds. Mostly seen flying or perched, rarely soaring.

Up-close tip: Long tail with short wings.

Often mistaken for: Cooper's hawk, merlin.

COOPER'S HAWK

Like the smaller sharp-shinned hawk, the Cooper's is a resident of conifer forests and urban areas. One way experts differentiate the two raptor species is by their silhouettes. Because the Cooper's head is larger with respect to its body than the sharp-shin's, the Cooper's silhouette in flight looks more like a lowercase "t." Another way of distinguishing the two is by looking at the tail: The Cooper's is longer and rounded while the sharp-shin's is shorter and squared off.

When: Year-round in western and southern Montana; summer elsewhere.

Where: Statewide, in conifer forests and wooded urban areas, near water.

ID tips:

- Crow-size raptor with a larger head when compared to the sharp-shin's. Breast and belly are white with rust-colored streaking.
- Head is flat on top with an overhanging brow that creates a fierce expression.
- Slow, countable wingbeats compared to the faster wingbeats of a sharp-shin.
- Tail shows three bars from above or below with a rounded tip.

Behavior tips: Often seen in urban areas chasing songbirds through trees and brush. Mostly seen flying or perched, rarely soaring.

Up-close tips: Tail often shows a white tip. Eyes can be red, yellow, orange, or gray.

Often mistaken for: Sharp-shinned hawk, merlin, northern goshawk.

NORTHERN GOSHAWK

Consider yourself lucky—and far from civilization—if you spot one of these rarely seen raptors. Northern goshawks mainly live in mature conifer forests, especially in remote wilderness areas. The largest of the accipiters, they hunt along forest openings and edges in search of mountain grouse, ground squirrels, and snowshoe hares. Due to their size, with wingspans of more than three feet, and slow, powerful wingbeats, they can be mistaken for a buteo. Look for the striking bicolors of the slate-gray body, wings, and tail and the white front with fine gray barring when seen up close. If you spot one perched in a tree, look for the red eyes and white "eyebrows."

When: Year-round.

Where: Western and south-central Montana, usually in dense coniferous forests during warmer months; in winter, in more open habitat interspersed with trees.

ID tips:

- Slate-gray on top and whitish gray below.
- Pointed, broad wings when flying.
- Both sexes have dark gray overwings and body, a lightly barred belly, and a gray banded tail.

Behavior tip: Often seen as a dark blur as it races through dense forest pursuing birds.

Up-close tip: Red eyes and prominent white "eyebrows."

Often mistaken for: Cooper's hawk.

CLOCKWISE FROM TOP LEFT: SHUTTERSTOCK; DAN ELLISON; SHUTTERSTOCK; DONALD M. JONES; DONALD M. JONES; FC BERQUIST

Falcons

(Long, pointed wings and narrow tails)

AMERICAN KESTREL

The American kestrel is Montana's smallest raptor and another that's commonly seen statewide. This robin-size falcon is most often spotted hovering over a field or pasture, wings motionless or flicking in a hover, facing the wind, as it looks for grasshoppers, mice, and meadow voles. Also watch for them on fence posts and utility wires, bobbing their head and tail.

In addition to its small size, the male kestrel stands out with its distinctive bright blue-gray head and wings and red-brown back and tail, tipped in black. The female is less brightly marked, but both sexes have a distinct dark vertical "teardrop" mark below the eye.

When: Warmer months, though year-round in parts of southwestern Montana.

Where: Statewide, near grasslands, farmlands, and urban areas.

ID tips:

- Small raptor with long, pointed wings and long tail.
- Familiar call is a loud *killy-killy-killy.*
- Male has blue-gray wings on top, pale beneath, and a red-brown tail with black tip.
- Female has orange wings on top, pale beneath, and a barred, light red-brown tail.

Behavior tips: Often seen hovering, or perched on fence posts, utility wires, and telephone poles, in open rural areas. When flying, rapid wingbeats are almost too fast to count.

Up-close tip: Dark "eye spots" (ocelli) on the back of head may give the illusion that it is looking at you, which may be a way of discouraging other predators from stealing prey or attacking.

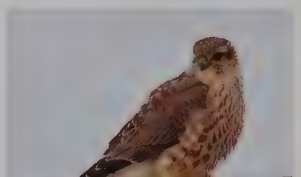
Often mistaken for: Merlin.

MERLIN

The merlin is a close cousin of the kestrel and only a tad larger, with dark slate-blue wings. Underneath, the body is light and the wings have a checkered appearance. Merlins are distinguished by their rocket-like flight through conifer forests and wooded residential areas.

When: Year-round, though less common west of the Divide in winter.

Where: Statewide, in forests and also, in winter, wooded urban areas, where they prey on waxwings in mountain ash.

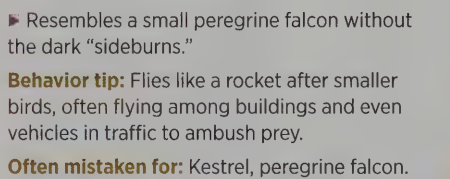


ID tips:

- Small raptor, though a bit larger and chunkier than a kestrel.
- Stiff, shallow wingbeats.
- Resembles a small peregrine falcon without the dark "sideburns."

Behavior tip: Flies like a rocket after smaller birds, often flying among buildings and even vehicles in traffic to ambush prey.

Often mistaken for: Kestrel, peregrine falcon.



PEREGRINE FALCON

The peregrine falcon is famous as the fastest-flying animal on earth, diving after prey at up to 200 miles an hour. But you are more likely to spot one perched on a cliff near a large river in western or south-central Montana. When it's perched, look for the peregrine falcon's dark "helmet" head and dark "sideburns"; a light, barred belly; and long, slate-gray wings. In flight it has a short, narrow tail and long, pointed wings.

When: March until October.

Where: Western and south-central Montana, in open areas near rivers and lakes with prominent snags, cliffs, and crags used for perching.

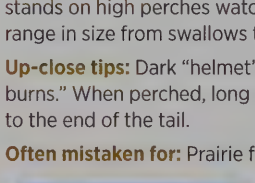
ID tips:

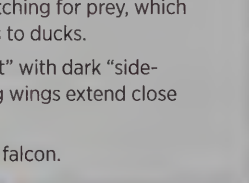
- Large, bulky body with long, pointed wings.
- Both male and female are dark slate-blue above with light underparts, and narrow, even barring across a light belly.
- Uniformly patterned underwings.

Behavior tips: Quick, shallow wingbeats. Often stands on high perches watching for prey, which range in size from swallows to ducks.

Up-close tips: Dark "helmet" with dark "sideburns." When perched, long wings extend close to the end of the tail.

Often mistaken for: Prairie falcon.





CLOCKWISE FROM TOP LEFT: DAN ELLISON/SHUTTERSTOCK; DANNY J. BROWN; KEN ARCHER; BOB MARTINKA; DONALD M. JONES; BOB MARTINKA; THERESA JOHNSON

PRAIRIE FALCON

The prairie falcon is a brown-marked raptor of open grasslands and sagebrush prairie, but unlike the peregrine it is rarely found near water. It has the same body size and wing shape as the peregrine, but is pale brown above and lighter underneath, with distinctive dark "armpits" visible when flying. You see this falcon cruising low over arid prairie and rangeland in central and eastern Montana.

When: Year-round.

Where: Statewide, though mostly east of the Divide, in open grasslands, river breaks, and sagebrush prairie.

ID tips:

- Large, bulky body with long, pointed wings with stiff wingbeats.
- Sandy brown body and wings above, light below, with a light belly and dark "armpits."
- Uniformly patterned underwings.

Behavior tip: Cruises low over grasslands.

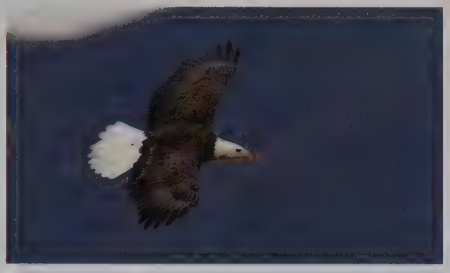
Up-close tip: White "eyebrow" and pale brown "moustache" and "helmet."

Often mistaken for: Kestrel, peregrine falcon, northern harrier.

CLOCKWISE FROM TOP LEFT: DICK WALKER; JOHN ROLOFF; LEE NELSON; DUANE HUIE; DAN ELLISON; BOB MARTINKA; SHARON DEWART-HANSEN; DUANE HUIE

Eagles

(The largest raptors)



BALD EAGLE

Due to their bright white head and tail, adult bald eagles of both sexes are the easiest of all raptors to identify. These massive birds of prey, with nearly seven-foot wingspans, are found mainly around water, where they feed on fish they catch, find dead, or steal from ospreys. In winter, when they scavenge road-killed deer, they can be seen along highways. From a distance, flying bald eagles can be mistaken for turkey vultures. But unlike vultures, bald eagles soar with outstretched wings held nearly straight, like a flying plank.

Immature bald eagles, which lack the white head and tail, are often mistaken for golden eagles. To identify an immature baldy, look for bits of white in the body and white "armpits." Golden eagles have almost no white in the body and none in the armpits.

When: Year-round.

Where: Western and south-central Montana, in summer near rivers, lakes, and reservoirs; in winter their range widens to feed on gut piles, roadkill, and cattle and elk calving afterbirth.

ID tips:

- Massive raptor with long wings, broad tail, big head, and big yellow beak.
- When soaring, outstretched wings are flat, like a plank. Wingbeats are slow and heavy.
- Adults have a distinctive white head and tail; black-brown belly, back, and wings.
- Massive nests as large as a VW Beetle, usually in cottonwoods
- Juveniles show some white on the body and "armpits," growing into a white head, white tail, and yellow beak by age four or five.

Behavior tip: Often seen soaring near open water.

Often mistaken for: Turkey vulture (from a distance). Immature bald eagles are often mistaken for golden eagles.

GOLDEN EAGLE

Like bald eagles, golden eagles are massive raptors with nearly seven-foot wing spans. Though the habitats of both eagle species overlap, goldens are mostly seen in grassland foothills and sagebrush prairie, often near rocky cliffs, rather than near big rivers and reservoirs. In winter, goldens often feed on road-killed deer and can be seen along highways next to bald eagles.

Adult goldens have uniform brown plumage with some gold feathers on the back of the head and neck. They are sometimes mistaken for immature bald eagles, which lack that species' distinctive white head. A golden has an almost entirely dark brown body and wings and shows almost no white.

When: Year-round.

Where: Statewide, mostly in mountains in summer, and in winter, in grasslands and sagebrush prairie or along highways feeding on roadkill.

ID tips:

- Massive raptor with long wings and broad tail but small head. Wingbeats are slow and heavy.
- Adults are almost entirely dark brown with a golden back of head, showing almost no white.

Behavior tip: When soaring, outstretched wings are held in a slight dihedral (shallow V), like a turkey vulture's and unlike the bald eagle's flat "plank" wingspan.

Up-close tip: Look for golden feathers on the back of the head, feathered lower legs, and yellow feet.

Often mistaken for: Turkey vulture (from a distance) and immature bald eagle.

Others

NORTHERN HARRIER

This is another easy-to-identify raptor due to its habit of soaring low, wobbling from side to side, over fields, wetlands, and meadows. The harrier has long, narrow wings extending in a shallow V (dihedral) and shows a distinctive white "butt" patch. In addition to the white rump, you can differentiate a harrier from a falcon by its small, owl-like head and long tail.

When: Year-round.

Where: Statewide, in grasslands and marshes.

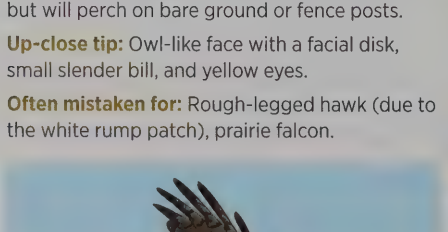
ID tips:

- Slim body; long, narrow tail; long, narrow wings stretched out in shallow V.
- White rump patch.
- Females and young are overall brown; males are gray with white underneath and black wing tips and wing edge.
- Small, round head.

Behavior tips: Soars low over meadows and marshes, teetering from side to side, with only occasional wingbeats. Rarely perches in trees but will perch on bare ground or fence posts.

Up-close tip: Owl-like face with a facial disk, small slender bill, and yellow eyes.

Often mistaken for: Rough-legged hawk (due to the white rump patch), prairie falcon.



OSPREY

If you're near a lake, reservoir, or large river in western or central Montana and see a light-colored raptor overhead with long, narrow wings that seem broken at the "wrist," it's an osprey. From below, these fish-eating raptors usually show a creamy body and front wing linings and dark brown "wrists" and rear flight feathers. On top, the body and wings are dark brown except for the white head crown.

When: Summer, arriving in early April.

Where: Mostly western and central Montana, near rivers, lakes, reservoirs, or other waters containing fish, even in towns and cities.

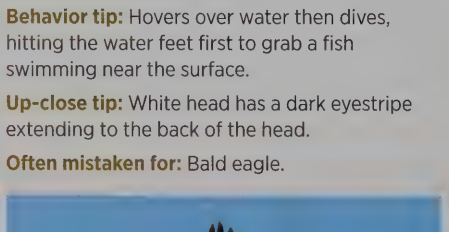
ID tips:

- Dark brown on top with white head and dark eyeline, and cream underneath with dark brown flight feathers and "wrists."
- Extremely long wings appear broken at the "wrists," creating an M-shaped silhouette.
- Builds large stick nests on manmade platforms, utility poles, and large dead trees within a half mile of water.

Behavior tip: Hovers over water then dives, hitting the water feet first to grab a fish swimming near the surface.

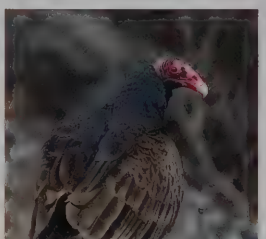
Up-close tip: White head has a dark eyestripe extending to the back of the head.

Often mistaken for: Bald eagle.



TURKEY VULTURE

Though turkey vultures don't hunt live prey, they are still considered raptors and have DNA similar to hawks and eagles. Turkey vultures are large birds, seen in the distance soaring off bluffs, their wings teetering unsteadily and rarely flapping. They have long wings held out in a shallow V (dihedral) and a tiny head, looking from a distance almost headless. From below, the wings show a two-tone effect, with a distinct dark body and wing coverts (front feathers) contrasting with light flight (rear) feathers.



When: Summer.

Where: Statewide, near roadsides, farm fields, grasslands, and along river and mountain bluffs.

ID tips:

- A large bird with long wings and a tiny head.
- Wings extend out in a shallow V (dihedral); unsteady, teetering flight.
- Dark body and front feathers contrasts with light flight feathers, creating a two-tone effect.

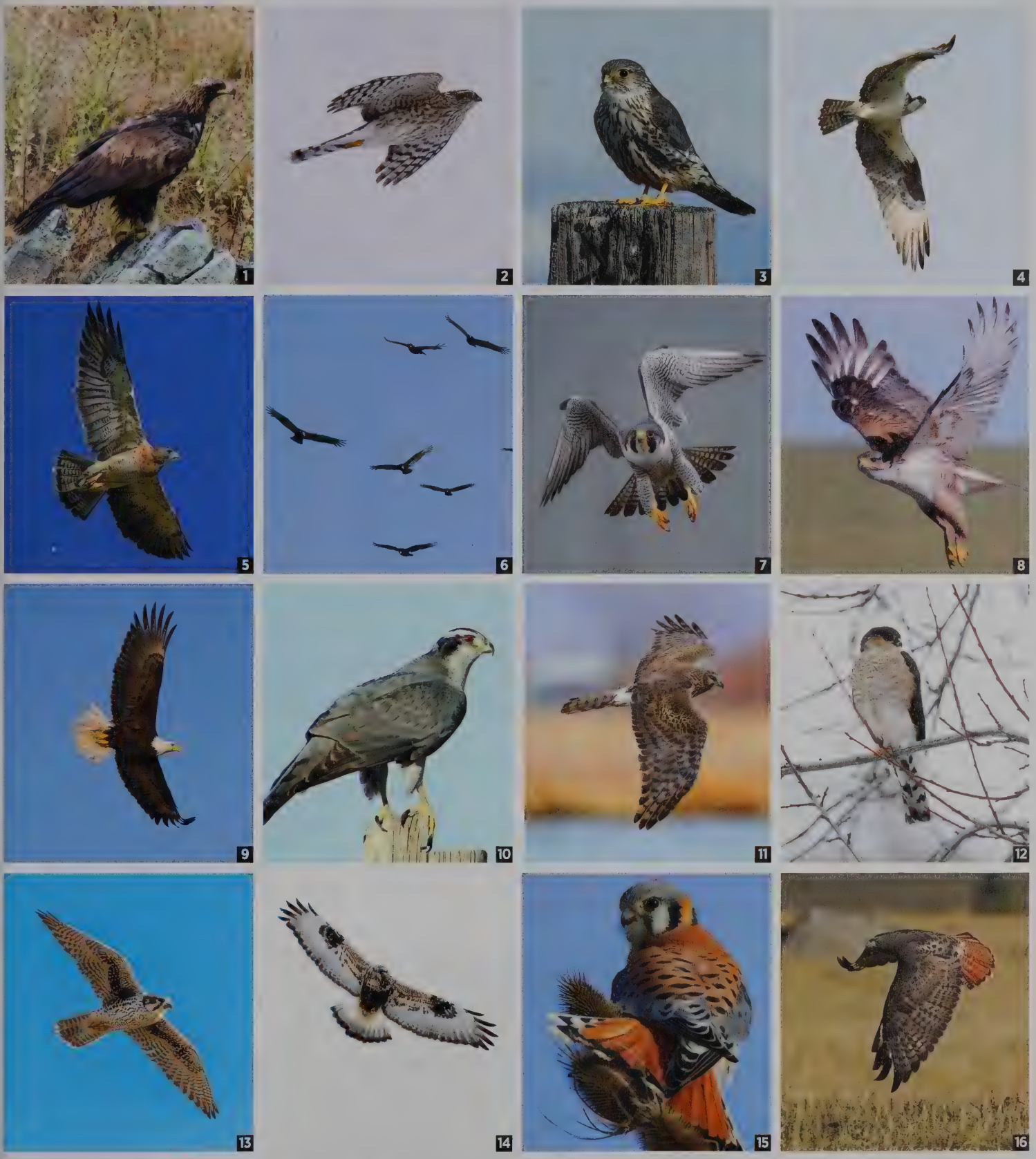
Behavior tips: Rarely flaps wings. Mainly seen soaring high overhead, often in "kettles" of three to ten or more, or on the ground feeding on dead deer or other carrion.

Up-close tip: Head is red and featherless; beak is bright white.

Often mistaken for: Golden eagle, bald eagle.

CLOCKWISE FROM TOP LEFT: JEANETTE TASEY; KEN ARCHER; DONALD M. JONES; DONALD M. JONES; NORA BATZUN; JASON SAVAGE; SHARON DEWART-HANSEN; PHIL FARNES

Take a "good enough" guess and try to identify these raptors:



Answers: 1. Golden eagle; 2. Cooper's hawk; 3. merlin; 4. osprey; 5. Swainson's hawk; 6. Turkey vulture; 7. Peregrine falcon; 8. Ferruginous hawk; 9. Bald eagle; 10. Northern goshawk; 11. Northern harrier; 12. Sharp-shinned hawk; 13. Prairie falcon; 14. Rough-legged hawk; 15. American kestrel; 16. Red-tailed hawk

1 DONALD M. JONES; 2 KEN CLARK; 3 JOHN RUDOFF; 4 DICK WALKER; 5 CAROL POLICH; 6 DONALD M. JONES; 7 SHUTTERSTOCK; 8 FC BERGQUIST; 9 DONALD M. JONES; 10 SHARON DEWART HANSEN; 11 DICK WALKER; 12 DONALD M. JONES; 13 LEE NELSON; 14 DICK WALKER; 15 KEN ARCHER; 16 CAROL POLICH

University of Montana graduate student Jessica Krohner spent the past year in a cramped office looking at more than 300,000 trail-camera photos. She scrolled through shots of empty space, deer, bears, martens, more than a dozen bird species, and several wolves and mountain lions. The trail cams also captured images of wolverines, an elusive species rarely seen or photographed. But even wolverines were more abundant in the photos than Krohner's target: fishers.

That's not unexpected in the northern Rocky Mountains. "A big question we have is whether that's because numbers have declined historically or because they've never been very abundant here in the first place," Krohner says.

Krohner grew up in Massachusetts and knows a lot about fishers, midsize members of the weasel family that for reasons unknown have long been more abundant in the Northeast than the mountainous West. But ever since she started working for the Idaho Department of Fish and Game (IDFG) in 2016, even after spending weeks in remote backcountry mountains monitoring wildlife, Krohner has never glimpsed a single live fisher. So rare is the species that most people haven't even heard of it. "I'm constantly surprised by how many people don't know what I'm talking about when I tell them what I'm studying," Krohner says.

No wonder. Fishers are a state-level endangered species in Washington, have all but disappeared from California, and are seldom seen in Idaho or Montana.

That apparent rarity, as well as a lack of scientific information on fisher distribution

INTO THE BACKCOUNTRY Above: Bob Inman, FWP Carnivore-Furbearer Program coordinator, stops to check his GPS while sledding in supplies for a fisher survey station in the Bitterroot Mountains near Lolo. Right: Biologists and volunteers also skied and snowshoed into remote areas to check and restock a total of 324 stations in western Montana and north-central Idaho in an unprecedented search for fishers.

PHOTO CREDITS: JUSTIN GUDE/MONTANA FWP; LAURA LUNDQUIST

SEARCHING FOR THE ELUSIVE FISHER

In an unprecedented survey, crews in Montana and Idaho set up hundreds of bait stations in targeted mountain habitat to locate these rare predators. **By Laura Lundquist**

and abundance, has prompted Montana Fish, Wildlife & Parks and IDFG to focus more attention on the elusive forest predator. Scientists from the two states, the U.S. Forest Service, and the University of Montana devised a way to survey fishers in the northern Rocky Mountains to better understand which habitats fishers use so that conservation efforts could focus on those areas. They hired Krohner to carry out the project.

HOUSE CAT X WEINER DOG

Fishers are furtive creatures of dense forests. Weighing 7 to 10 pounds, they have a thick, dark coat; a long, bushy tail; and a long muzzle. "I describe them to people as a cross between a house cat and a weiner dog," says Joel Sauder, an IDFG wildlife diversity biologist. Though sometimes called "fisher cats" because of their partially retractable claws and ability to climb trees, fishers are not related to felids. They also don't eat fish but rather mountain grouse, beavers, and snowshoe hares. The name comes from the Old Dutch *fisse* or French *fichet*, names for the European polecat, a similar-looking mustelid (weasel family member).

Fishers have historically lived in the Lower 48 in the mountains of western California, the northern Rocky Mountains, and a large portion of the Great Lakes states and the Northeast. Numbers declined rapidly throughout the species' range in the late 1800s and early 1900s due to heavy commercial trapping and logging.

The first challenge for FWP and IDFG biologists was to decide where to search for the seldom-seen furbearers. They narrowed the scope to northern Idaho and western Montana, based on several attempted

LIGHTS! CAMERA! VENISON! Clockwise from top left: University of Montana graduate student Jess Krohner positions a trail camera on a tree while FWP pilot Trever Throop affixes brass gun brushes that will snag hair when fishers or other wildlife climb past them to reach the bait; Justin Gude, head of the FWP Wildlife Research Bureau, wires a venison haunch to a bait station; FWP game warden Alex Mattson, FWP wildlife biologist Liz Bradley, and FWP wolf specialist Tyler Parks signal to a trail camera that a site is ready to detect fishers.

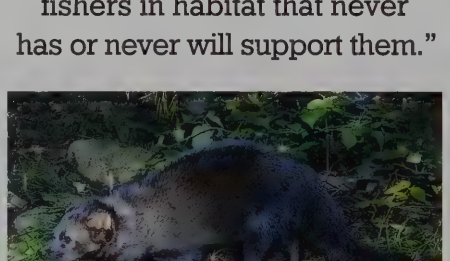
introductions, habitat models created from field studies conducted in Idaho and western Montana, and detailed reports required from trappers.

In the early 1960s, Montana imported roughly a dozen fishers from British Columbia and released them in mountain ranges west of the Continental Divide. The goal, says Bob Inman, FWP Carnivore-Furbearer Program coordinator, was to reduce numbers of porcupines, which fishers prey on and loggers consider a tree-damaging pest, while creating an additional fur resource for trappers. At the same time, similar numbers of fishers were transplanted into four areas on the Idaho side of the Bitterroot Mountains. Later, around 1990, biologists transplanted 110 fishers from Wisconsin and Minnesota into the Cabinet Range.

As part of his doctoral work at the University of Idaho from 2007 to 2012, Sauder helped build a map of probable fisher habitat based on radio telemetry data from collared fishers in north-central Idaho. Data from that and another study led Idaho and Montana biologists to believe that the species' core habitat in the Northern Rockies is in the moist red cedar forests of Idaho's Clearwater and St. Joe National Forests and parts of the Cabinet Mountains south of Libby, Montana. Sauder says fishers in the Northern Rockies prefer forests of large, mature trees with cavities where they can den and rest. Because it naturally hollows out with age, the western red cedar makes ideal fisher habitat.

The translocation areas as well as places where trappers in recent decades have caught fishers were added to the habitat study sites to create a map of where biologists wanted to survey.

> "We don't want to spend time and money trying to conserve fishers in habitat that never has or never will support them."



Though core fisher habitat is wet and dominated by red cedars, historical trapping data shows some fishers also in drier, higher-elevation forests, mostly in Montana. Trappers have captured fishers along the east slope of the Bitterroots, particularly around Lolo Pass. "Though that's much drier than what we consider prime fisher habitat, it's very close to wetter habitat dominated by red cedar in Idaho," says Inman. "This survey should tell us whether those animals just occasionally 'spill over' from quality Idaho habitat, or if they also can exist year round in drier habitats on the Montana side, far from those wetter areas."

That information matters, Inman continues, "because if fishers aren't really using the drier habitats year-round, then we don't want to spend time and money trying to conserve 'would be' fisher habitat that never has or never will support the species."

That's only part of what Krohner's study will show. Biologists will also use the data to understand where soil and moisture

Laura Lundquist is a writer in Missoula.

GOT ONE Above left: Bob Inman checks images captured by a bait station trail camera. Above right: An image from the camera shows a fisher taking bait wired to a nearby tree. Such photographs were rare, especially in Montana, reflecting the relative scarcity of the species and its habitat in this state. Conducted in Montana and Idaho, the fisher survey project was funded largely by the federal Pittman-Robertson Program, which uses a federal excise tax on hunting and shooting gear to pay for wildlife research and management.

conditions produce the best fisher habitat. "That way we can provide denning structures, improve habitat, and even do future translocations to help keep fishers distributed everywhere they should be," Inman says.

Fisher trapping is no longer legal in Idaho and is strictly managed in Montana. Trapping is allowed only in portions of the state's northwestern region for a few months each winter, with a total harvest quota of just five fishers. After the quota is reached, or when a single female is trapped, FWP closes the season.

FISHERS ON FILM

In mid-March 2019, volunteer Bruce Hazeltine straps on snowshoes for the five-mile trek up the Fred Burr Trail to a fisher camera trap he'd helped install a few months earlier. FWP biologist Rebecca Mowry and three other volunteers from Wolverine Watchers, a citizen-scientist monitoring group, do the same as the morning sun casts a rosy glow on the Bitterroot Mountains. "I love doing this," Hazeltine says. "It gets me outside in the winter, and I always learn something new."

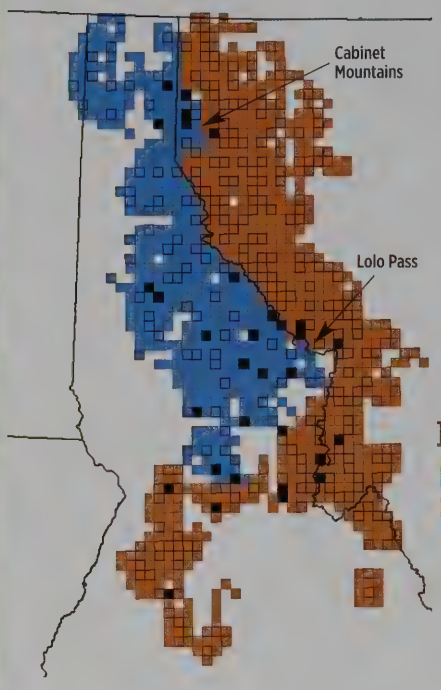
In previous years, the Missoula-based group has set several camera traps for wolverines in the Bitterroot and Sapphire Mountains, including one along the Fred Burr Trail. They were among dozens of professional and volunteer crews that took part in a wolverine survey across Montana, Wyoming, Idaho, and Washington (see "Where Are the Wolverines?" November-December 2018, *Montana Outdoors*). Because wolverine and fisher surveys often overlap geographically, this year FWP asked group members if they'd also set out bait stations and cameras for fishers.

> "If we hadn't had the game wardens helping us, I don't think we could have finished the survey."

The week before, Mowry had accompanied volunteers to three other sites to download trail-camera photos and hang venison haunches as bait on trees opposite the cameras. Earlier, she'd set several camera traps even farther up the Bitterroots. Because deep snow later in the winter would make these sites inaccessible for rebaiting, she installed camouflaged scent pumps. Originally devised by Sauder for the wolverine survey, the pumps are similar to machines that spray air freshener into public restrooms. Each pump periodically dribbles a small amount of liquid that reeks of skunk onto a large bone wired to a tree. The smell attracts fishers and other carnivores, and the camera captures their images as they climb to investigate.

Other FWP employees set similar traps throughout western Montana, from the southern end of the Bitterroots to the northern tip of the Cabinets, while their counterparts in Idaho did the same. Temporarily swapping ticket books for snowshoes, more than a dozen FWP game wardens provided essential assistance. "If we hadn't had them

CLOCKWISE FROM TOP LEFT: JUSTIN GUDE/MONTANA FWP; JESS KROHNER; JESS KROHNER



Where are the fishers?

Cameras captured fishers in nine Montana cells and 23 Idaho cells. "That's right in line with what we expected," says Justin Gude, head of FWP wildlife research. "Based on historical records and field habitat studies, we didn't expect to find fishers in most of the drier, high-elevation sites found mainly in Montana. But we needed to scientifically document that hypothesis."

Key

- Predicted core habitat (wetter)
- Predicted secondary habitat (drier)
- 324 cells with trail cams
- Cells where fishers were photographed

SOURCE: JESSICA KROHNER AND MONTANA FWP

HARD TO FIND Above left: A photo of a captive fisher shows the animal's lush fur, dark coloration, and long muzzle. Below: A wild fisher leaves a remote backcountry survey station in Idaho. Above right: The recent survey of the species in Idaho and Montana showed that fishers stick mainly to wet, cedar-dominated core habitat, occasionally venturing into nearby dry, lodgepole pine-dominated habitat.

helping us, I don't think we could have finished the survey," Mowry says.

Because it would be impossible to count all of the elusive animals, biologists used the remote cameras to generate a distribution estimate, called "occupancy." They divided the vast mountainous landscape of Idaho and western Montana where fishers might live into 1,134 "cells," each measuring 22 square miles. A camera was set up in each of a random sample of 324 cells, in both core fisher habitat and secondary drier habitat, to establish what percent fishers occupied. As crews retrieved the cameras in the spring of 2019, they sent the photo files to Krohner to review.

WET, NOT DRY

Krohner found fishers in photos from nine Montana cells (four in the Cabinets and five in the Bitterroots) and from 23 Idaho cells. Though Krohner hadn't finished her analysis when this article went to press, Justin Gude, head of FWP's wildlife research program, says the preliminary findings appear to confirm biologists' suspicions. "It looks like fishers were detected mostly in wetter areas and drainage bottoms with taller, denser forests and, in Montana, were either in wet habitat or in drier habitat near those places," he says. "That indicates they only move occasionally from the wetter habitats and don't fully use the drier habitats, which would have been indicated by occupancy spread randomly throughout the drier, high-elevation sites."

The findings weren't surprising. In 2003 Ray Vinkey, now a U.S. Forest Service biologist, combed Montana's historical records for any mention of fishers by trappers or naturalists. He found only two references from before 1930. "That's far fewer historical records than we have of wolverines, and wolverines are extremely rare," says Inman, the FWP furbearer expert. What that implies is that Montana likely has never been home to many fishers, lacking the habitat the species requires. "This new survey appears to bear that out," Inman says. "That's good to know, because we don't want to set expectations that fishers can live in places where they can't—like in dry, high-elevation lodgepole forests that lack the tree cavities they need."

> If we don't know where fishers are—and aren't—we can't work to conserve the places where they live.

Gude adds that the survey located fishers near previous translocation areas in the Cabinets and in places where trapping has occurred. "The former tells us that future translocations in those same areas might work," he says. "The latter indicates that trapping, which is now regulated to a very low level, probably isn't limiting distribution."

As wildlife biologists in Montana and Idaho wait to read and discuss Krohner's final report, they've begun working on ways to piggyback a second fisher survey on another wolverine study scheduled for 2022. By setting trail cameras out every few years, they can track whether fisher distribution is shrinking, expanding, or even shifting into new areas.

"It's critical that we keep monitoring," says Gude. "If we don't know where fishers are—and aren't—we can't work to conserve the places where they live."

TOP TO BOTTOM: SHUTTERSTOCK, JESS KROHNER

Plugging the Leaks

A worrisome incident in September 2019 highlights the need for Montana to continue improving watercraft inspections.

By Jim Pashby

In late September 2019, a boat from Chicago infested with invasive mussels slipped through two Montana inspection stations before inspectors with the Confederated Salish and Kootenai Tribes (CSKT) intercepted it in Ravalli and decontaminated the vessel.

"We were extremely concerned that the boat's mussels escaped detection," says Thomas Woolf, bureau chief of the Montana Fish, Wildlife & Parks' Aquatic Invasive Species (AIS) Program. "After that, we knew we needed to take even more steps to improve quality control at inspection stations."

The driver hauling the infested boat was headed for Seattle and stopped at Montana watercraft inspection stations in Wibaux and Anaconda, where crews failed to spot the mussels. Montana's AIS protocols require that a contaminated vessel be decontaminated with hot water to remove and kill invasive species before it can leave an AIS check station.

In 2019, inspectors with FWP, tribes, conservation and weed districts, and other entities checked more than 113,000 boats. They discovered invasive mussels on 16, all of which were decontaminated.

So how did the Chicago boat slip through Montana's line of defense?

The inspector at the Wibaux AIS station, on I-94 near the North Dakota border, failed to inspect the boat properly yet provided paperwork to the driver indicating the craft was clean, Woolf explains. When the driver stopped at the Anaconda station, inspectors reviewed the paperwork and allowed the boat to proceed without inspection. "When inspectors encounter a boat already inspected at another Montana station, they don't perform another full inspection but are still supposed to look at the boat to ensure it's clean. That didn't happen," Woolf says.

When the boat reached the Ravalli AIS station, inspectors followed protocols and identified mussels on the boat. They decontaminated the craft and notified the state of Washington so it could be examined again after reaching its destination.

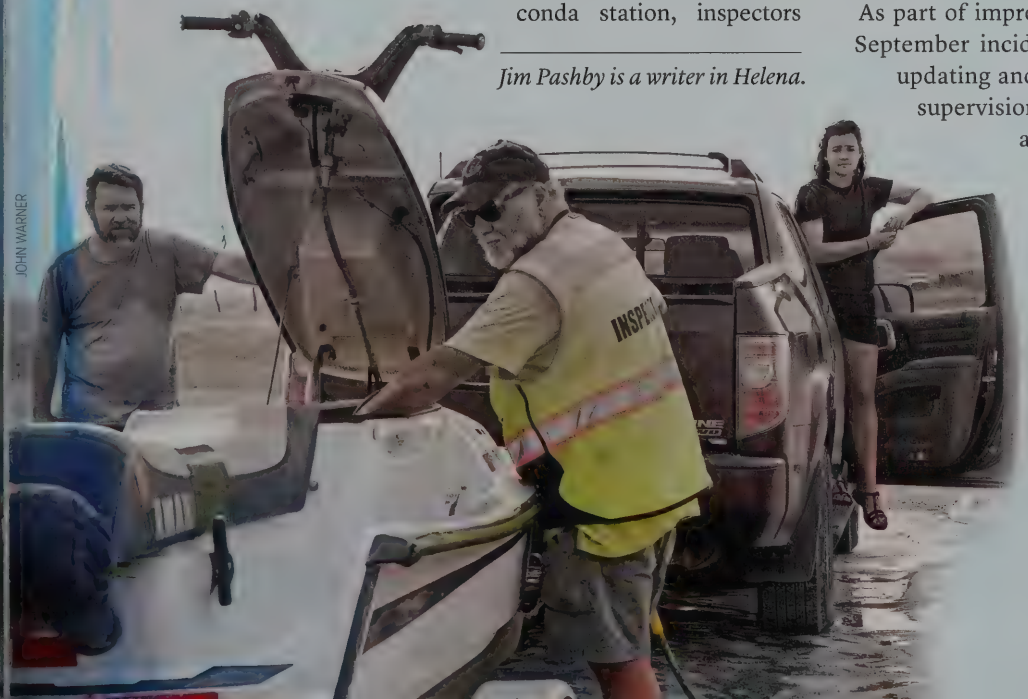
Woolf says the incident highlights the challenges of managing watercraft inspection stations in a large, rural state. "Our inspectors are seasonal employees working long days in remote areas with minimal supervision," he says. "Most do outstanding work in tough conditions interacting with boat owners—who sometimes aren't happy about having to stop for an inspection. It's not easy making sure every inspector follows protocols correctly every time, all season long."

Until recently, regional AIS supervisors were responsible for overseeing dozens of inspectors at multiple stations, sometimes hundreds of miles apart. "For instance, the eastern supervisor managed five stations covering an area the size of the state of Washington," Woolf says. FWP has now begun contracting with local entities like conservation districts to manage many of the stations. "This encourages local ownership in the issue and allows expanded oversight and improved quality control," Woolf says. FWP is also contracting with the CSKT to operate two stations on the Flathead Indian Reservation.

As part of improvements already scheduled when the September incident occurred, the department is also updating and enhancing inspector training, adding supervision and quality control requirements, and surveying boat owners about their experiences at stations.

"The reality of watercraft inspection stations is that we rely heavily on individual inspectors to do their job every single time," says Woolf. "We have a great team and many great inspectors who are pulling hard to make things work the best they possibly can. But like anyone, an inspector can have a bad day and make a mistake. Even so, we're taking steps this season to tighten things up even more to protect Montana waters from harmful invasives."

Jim Pashby is a writer in Helena.



JOHN WARNER

HOMECOMING

The trumpeter swan's long-awaited return to the Flathead and Blackfoot Valleys

By Anthony Pavkovich

The Montana Waterfowl Foundation headquarters sits at the end of a gravel road in 30 acres of dense forest and marshy wetlands in the Mission Valley, south of Flathead Lake and about 40 miles north of Missoula. Its shaded grounds are dotted with ponds, which sparkle in the sunlight on this still summer morning. The site's peace and tranquility will soon be shattered. A crew of volunteers has recently arrived to wrangle the foundation's six yearling trumpeter swans, allowing biologists to take blood samples and slip colored plastic identification collars around the birds' necks. Later this summer, the swans will be released on the Flathead Indian Reservation to augment a recovering population that had once completely disappeared. ▸▸

PHOTOS: ALEX BADYAEV

TRIBAL TRUMPETERS Left: Two adult trumpeter swans swim in a marsh on the Flathead Indian Reservation south of Flathead Lake. Below: Banded swans in a trailer are ready for release at the reservation, where tribal biologists have been working on restoring the magnificent birds since 1996.

Catching and holding a trumpeter swan is not easy. As North America's largest waterfowl, adult trumpeters weigh 20 to 32 pounds and have a wingspan of nearly seven feet. Nearly that large, these yearling swans make formidable quarry for the volunteers. Honking with alarm, wings flapping and feathers flying, the birds are slowly herded to the corner of a fenced enclosure then embraced in a bear hug or netted by the experienced crew. Once caught, however, each swan turns surprisingly docile and rests its head on the wrangler's shoulder.

Leading this historic reintroduction program is Dale Becker, who has managed the Confederated Salish and Kootenai Tribal (CSKT) Wildlife Management Program for 30 years. Becker and his team of biologists manage species ranging from ducks and pheasants to wolves and grizzly bears on the 1.34 million-acre reservation. Swans are a favorite. "A large part of their appeal is that they are so huge, and they fly with such grace and beauty," says Becker, who also served as president of the national Trumpeter Swan Society from 2005 to 2010.

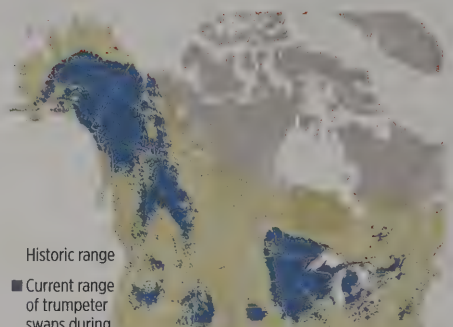
NEARLY GONE

For thousands of years, trumpeter swans lived and bred across much of western Montana. The birds feature in the Salish, Flathead, and Kootenai Tribes' oral histories. In 1806, Lewis and Clark recorded sightings of what were likely trumpeter swans near today's Townsend and Clearwater Junction. Father Pierre-Jean De Smet, founder of St. Mary's Mission, documented breeding trumpeters in 1842 near Flathead Lake.

Yet by the end of the 1800s, the trumpeter swan population had almost disappeared from western Montana and steeply declined across the rest of the United States. Hundreds of thousands were killed for their skins, meat, and feathers. At the same time, entire landscapes of wetlands were drained and converted to crops and pasture to feed the nation's growing population. By the 1930s, trumpeter swans were all but extinct; only a small population of fewer than 100 birds remained in the Lower 48, hidden from market hunters in the remote Centennial Valley west of Yellowstone National Park. The 1932 discovery led to the establishment of Red Rock Lakes National Wildlife Refuge.

In the early 1990s, the CSKT, U.S. Fish & Wildlife Service, and Montana Fish, Wildlife & Parks began discussing how to return trumpeter swans to western Montana after the bird's century-long absence. "It was important to the tribes' two elder committees that we replace this important missing piece of the region's biofauna," Becker says.

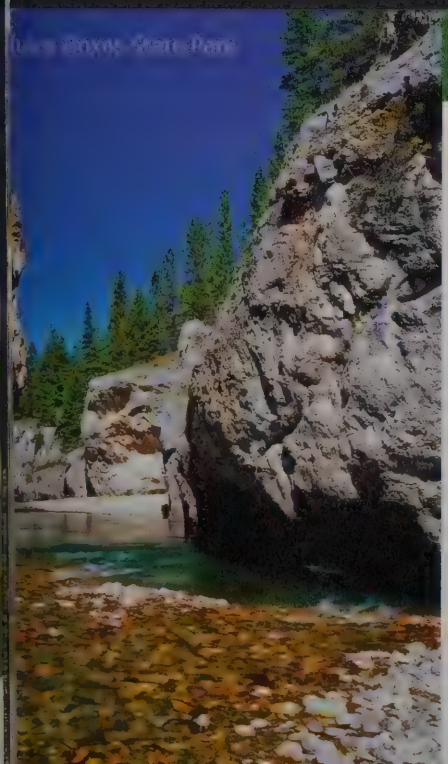
Swan habitat was abundant throughout much of the reservation. The Tribal Wildlife Management Program had restored critical wetlands and riparian areas damaged by drainage, plowing, and overgrazing. Funding came from a legal settlement over wildlife habitat lost with construction of Kerr Dam (now Séliš Ksanka Qĺispé Dam) in 1938 on the Flathead River southwest of Flathead Lake. To preserve the lands for wildlife and cultural use, the tribes also reacquired more than 11,000 acres of wetland and grassland habitats



LOSS THEN RECOVERY Before European settlement, trumpeter swans ranged across the northern half of North America. By the 1930s, market hunting and habitat destruction had reduced the population to near extinction in the lower 48 states. Restoration projects since have helped numbers rebound.

Anthony Pavkovich is a writer in Missoula.

RED FOR RESEARCH By fitting high-visibility bands on swans' necks, researchers can track the birds from year to year to see where they winter and nest. Right: John Jarvis, president of the Montana Waterfowl Foundation, cradles a yearling swan during a roundup. The powerful birds become docile once enveloped in the arms of experienced handlers. Facing page: Dale Becker, manager of the Confederated Salish and Kootenai Tribal Wildlife Management Program, bands an immature swan before release.



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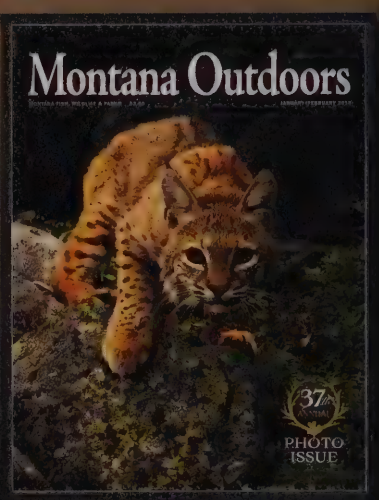

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across the reservation that had been owned by non-tribal members.

In 1996, the CSKT made its first attempts to restore swans to the Flathead Indian Reservation by relocating 19 wild adult trumpeters from southern Oregon. When the birds failed to return to the reservation after migrating to their wintering grounds, Becker and his crew tried a new approach. In 2002, they released 34 captive-reared, recently hatched swans (“cygnets”), hoping that migrating swans would be more likely to return to where they first learned to fly. “We learned that adult trumpeters rarely drop out of their migratory paths and colonize a new site,” says Becker.

The new method worked. The tribes continued releasing dozens of cygnets annually over the next 18 years. Now more than 200 swans reside in Flathead’s abundant wetlands. “We’re producing 60 to 70 young

swans each year," says Becker. "Things seem to be looking good for the long term."

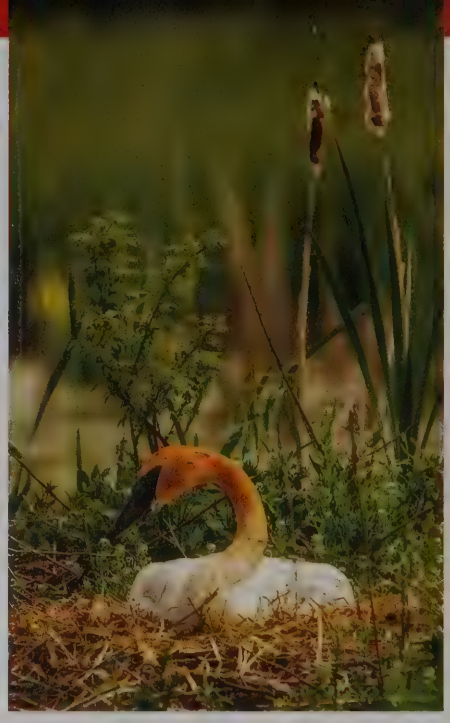
BLACKFOOT AND MADISON RELEASES

While the Flathead restoration was taking off, the USFWS and FWP were assessing the suitability of restoring swans to the Blackfoot and Madison Valleys.

The Blackfoot holds a staggering 30,000 wetlands ranging from shallow puddles to deep marshes rich in nutritious vegetation. Trumpeter swans require wetlands with clean, clear water where sunlight can penetrate to stimulate aquatic plant growth. The birds eat enormous amounts of water plants. A young swan can put on 12 pounds in the few short months of its first summer to prepare for its fall migration.

Federal and state biologists established a goal of seven nesting pairs for the Blackfoot Valley. In 2005, they released 10 young swans provided by a Wyoming waterfowl conservation group. Over the next decade, they released more than 200 adults and cygnets.

As in the Flathead, initial results were discouraging, says Greg Neudecker, a USFWS biologist who oversees the Blackfoot project. By 2010, not a single swan had returned to the Blackfoot from its wintering grounds. But then a few birds began returning and, more importantly, nesting. Then a few more. The program recently reached its goal of seven nesting pairs. "It just took a while for these long-lived birds to find nesting sites and get settled," Neudecker says.



HOPEFUL Though some people have seen adult swans with young in the Madison Valley, no nesting birds have been documented there since releases began several years ago. Biologists hope that, as in the Blackfoot and Flathead Valleys, it's just a matter of time before the big birds return.

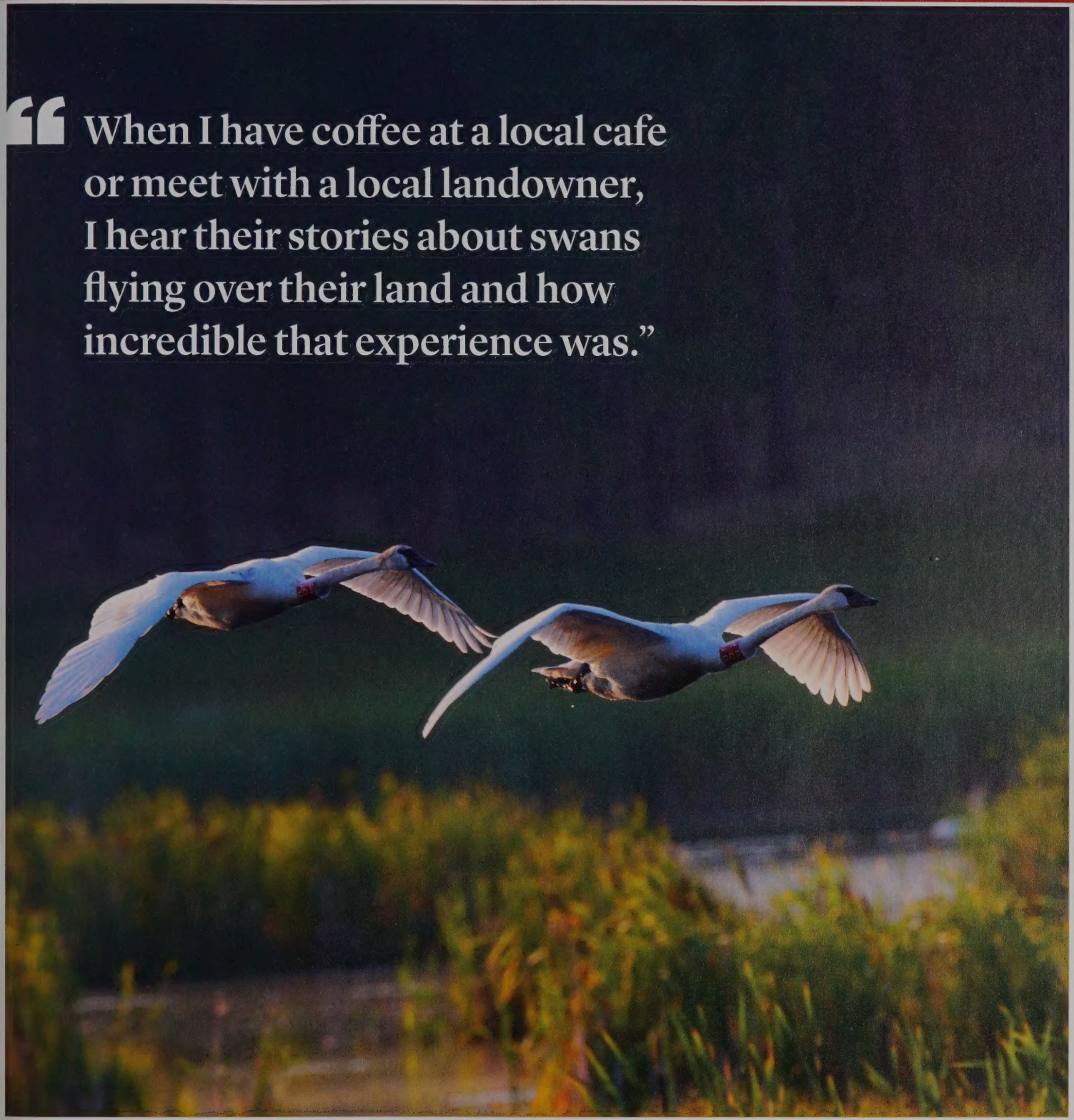
Neudecker works in an office near Ovando surrounded by intermountain prairie potholes. From his desk with a view of Upsata Lake and the Swan Range, he says the key to the swan restoration, in a landscape dominated by private property, has been to involve landowners whenever possible. "Trumpeter swans tug at the heartstrings of people in this valley," he says. "When I have coffee at a local cafe or meet with a local landowner, I hear their stories about swans flying over their land and how incredible that experience was."

Affinity for the charismatic waterfowl often translates into concern for habitats supporting the birds. "Engaging people in trumpeter swan conservation comes down to getting them engaged in wetlands and the associated landscape," Neudecker says.

Roughly 150 miles to the southeast of Ovando, biologists have been working since 2014 to restore swans in the Madison Valley near Ennis. Just as the Flathead and Blackfoot restorations struggled to take flight, the Madison's 29 adult and cygnet releases have yet to result in any documented nests. "What's hopeful is that people have seen several adults with young, so that implies the birds are nesting in the valley," says Claire Gower, FWP regional nongame wildlife biologist in Bozeman.

As scientists and resident swan fans look for nests in the Madison, Neudecker keeps his fingers crossed that the Blackfoot population will continue to grow. A few threats remain. Both there and on the Flathead

READY FOR LAUNCH Biologists carry immature swans for release by volunteers at Jones Lake in the Blackfoot Valley. The birds had been raised in Wyoming by the Wyoming Wetlands Society before delivery to Montana for their inaugural flight. "Swans return to the area where they first learn to fly," says Greg Neudecker, an Ovando-based biologist with the U.S. Fish & Wildlife Service's Partners for Fish and Wildlife Program.


“When I have coffee at a local cafe or meet with a local landowner, I hear their stories about swans flying over their land and how incredible that experience was.”

Reservation, swans are dying from collisions with power lines and the occasional tundra swan hunter who shoots the wrong species. Neudecker and Becker have been working withutility ompanies to hang reflectors from the lines, and with hunters to help them distinguish trumpeters from the nearly identical tundras (trumpeters honk while tundras whistle and hoot). “We’re seeing progress on both fronts,” Neudecker says.

Back at the Montana Waterfowl Foundation swan roundup, volunteers clean up while biologists test and band the final bird. “This will probably be the last reintroduction we do here,” says Becker, as the swan is released and waddles off to join the others in a large enclosure.

Though the trumpeter swan is no longer listed as a federally endangered species, many subpopulations in the northern Rocky Mountains struggle to recover, mainly due to habitat loss. The western Montana restorations, especially on the Flathead Reservation, offer proof that with ample habitat and strong public support, even a species once thought to have disappeared can eventually find its way home.

Looking down

From late March through midsummer each year, my wife and I compete to see who can spot the first emerging wildflowers on Mount Helena. *Douglasia* (dwarf primrose) usually show first, their mats of dark pink flowers appearing next to melting snowdrifts. Next are the white and lavender Montana phlox (which for years Lisa and I thought were *Douglasia* of a different color until finally we examined the petals of both species). Then come pasqueflowers, yellowbells, Easter daisies, shooting stars, nine-leaved desert parsleys. By late April, flowers are popping up so fast we can hardly keep track. At summer's end, we've usually counted 50 to 55 different species on the mountain, which rises about 1,300 feet above the city of Helena.

Scientists classify wildflowers as forbs—flowering plants that are not grasses or shrubs. Sometimes, in *Montana Outdoors* and other publications, you'll see forbs described as "flowering plants." That's accurate, but it irks some botanists because almost all plants, including grasses and shrubs, produce flowers of some sort.

Tom Dickson is editor of Montana Outdoors.

Wildflower identification can be daunting. Where we live in central Montana there are five species of phlox, cinquefoils, and violets, as well as three *Townsendias*. Some species are easy to identify—arrowleaf balsamroot, Missouri iris—but many have us baffled. We don't even try to figure out the shrubs and grasses, saving those for distant retirement when there's more time.

Field guides are a big help. We use *Wildflowers of Montana* (Mountain Press Publishing), *Plants of the Rocky Mountains* (Lone Pine Publishing), and *Central Rocky Mountain Wildflowers* (FalconGuides, Globe Pequot Press). But even those don't always agree on a wildflower's name—or even its existence. For instance, Nuttall's rockcress (*Arabis nuttallii*), a tiny four-petaled white flower common around here, isn't even mentioned in *Central Rocky Mountain Wildflowers*. Or it is but we just haven't found it.

We don't even try to figure out most shrubs and grasses, saving those for retirement when there's more time.

For a long time I had no idea all this diversity and beauty existed underfoot. During early season hikes I'd look at the ground only when stepping over rocks. Mainly I daydreamed or chatted with friends, often arriving at my destination with no memory of what I'd passed on the trail.

It's not that I didn't know how attending closely to my surroundings could enrich a hike. For years I've walked along streams and rivers in summer looking for trout riseforms or hatching insects. In fall and early winter, I'm always searching for buck scrapes and rubs in the woods, pheasant tracks in snow-filled cattails, or distant ducks in the sky. Setting your senses on "search" heightens any outdoor experience.

But for too long, I didn't pay much attention to my springtime surroundings. It was too early to fish and too cold for camping. That changed when I met Lisa. From her I learned to notice and identify emerging flowers and oddly shaped leaves. I discovered that Helena's seemingly drab mountain is for several months awash in micro-colors, from the shooting star's rich purple to the soft orange of a scarlet globemallow to the stunning bright pink of a bitterroot patch under the midday sun.

Now I see some of what's been around me all along. And wonder what else I've been missing up there on the mountain—and maybe down here in the valley with other aspects of my life.

I hiked the mountain yesterday and it was still barren. But soon wildflowers will appear, reassuringly, as they have for thousands of years: kittentail, cous biscuitroot, forget-me-not, rabbit-foot crazyweed, yellow violet, prairie smoke, Butte marigold, and on and on, ending with prairie coneflower, owl's clover, and, that bittersweet sign that summer is fading, goldenrod.

Over the 18 years of our contest, I've never won. Lisa is far better at spotting and identifying emerging forbs. No matter. Each year I learn more about wildflowers, about the environment where we live, and sometimes even a bit about myself.

ILLUSTRATION BY STAN FELLOWS

Black Cottonwood

Populus balsamifera By Brianna Randall

Cottonwoods define the rivers and streams throughout much of Montana. These instantly recognizable deciduous trees outline riparian areas across the state, glowing yellow in the fall, filling the sky with swirls of their fluffy namesake seeds each spring, and shimmering their heart-shaped leaves in the summer breeze.

Just as these trees rely on healthy floodplains for their survival, rivers depend on the trees as well. Cottonwood roots stabilize streambanks, while the trees' great, arching branches shade the water below to keep temperatures cool during summer. Cottonwood forests provide food and shelter for over half of Montana's bird species, as well as many fish, wildlife, fungi, and insects.

Montana is home to three distinct cottonwood species: the narrowleaf (*Populus angustifolia*), the plains (*Populus deltoides*), and the black (*Populus balsamifera*).

IDENTIFICATION

Trunks of mature black cottonwoods are dark gray and deeply furrowed. Young trees have smooth, white bark. Broad oval leaves taper to a point.

RANGE

One of the largest members of the willow family, *Populus balsamifera* is found from southern Alaska, across Canada, and down into the northern United States. In Montana, they are found in the western half of the state.

SIZE

In Montana, black cottonwoods can reach 120 feet tall and six feet in diameter and live 200 years or more.

CLIMATE

Cottonwoods can live in humid or arid climates, as long as they have deep alluvial (fertile and fine-grained) soils with abundant moisture. They can survive intense heat or frigid snowstorms, and colonize floodplains from sea level to 7,000 feet.

Brianna Randall is a writer in Missoula.

FLOWERS AND SEEDS

In late winter, cottonwoods produce flower buds filled with a sticky, aromatic resin. The buds turn into fuzzy fruiting flowers called catkins. From late May through late June, the female trees' fruits split to release clouds of fluff that resemble cotton. The silky white hairs help the tiny brown seeds embedded within disperse on the wind.

Many hay fever sufferers blame cottonwood fluff for their sniffles and sneezing. But in fact, the allergic reactions are primarily caused by other plants pollinating at the same time.

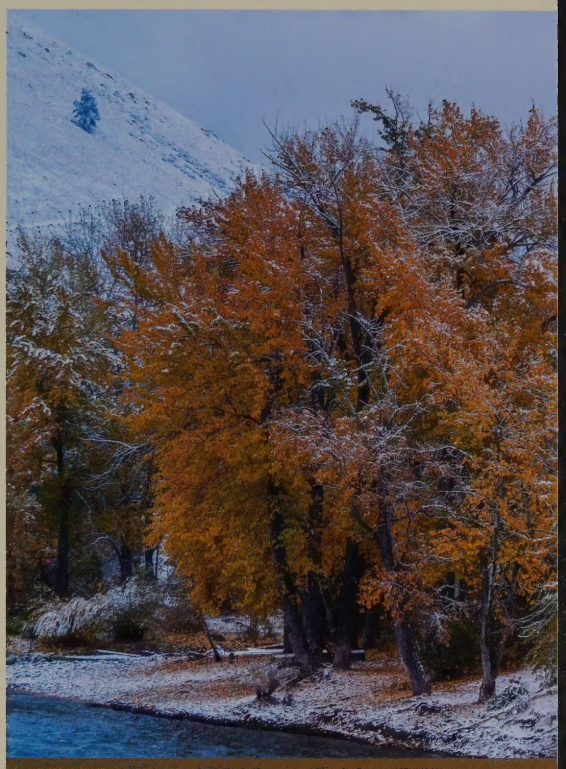
REPRODUCTION

The success of cottonwood seeds is all about timing. For the best germination, they need to land on the gravel bars or sandy shores of a river or stream as floodwaters recede so they can take root in residual silt. If the seeds land too soon, they wash away. But if they land too late, the ground is too dry for their threadlike roots to penetrate.

FLORA AND FAUNA

When old cottonwood trees topple into a river or stream, they provide habitat for fish and food for aquatic insects. On land, decaying or fallen cottonwoods produce fungi, including morel and oyster mushrooms, and provide cavities used by small mammals like mink, squirrels, and rabbits.

The bark and leaves of young cottonwoods supply food for elk, deer, and moose. Beavers gnaw on the bark and use toppled trees and limbs to build dams, which in turn create more wet habitat that grows more cottonwoods.



SCIENTIFIC NAME *Populus* is Latin for "people" and is the classical Latin name for poplar trees. *Balsamifera* ("balsam-bearing") refers to the resinous substance in the tree's buds, thought to resemble fragrant balsam sap.

Ospreys and eagles make nests in large cottonwoods. Cavity nesters like woodpeckers rely on cottonwoods for shelter, while migrating neotropical birds such as yellow warblers rest and refuel in cottonwood groves, feeding on the rich supply of insects.

TRADITIONAL USES

The cottonwood's sweet-smelling resin, known as balm of Gilead, has long been used by Native Americans and herbalists as a perfume and a remedy for respiratory ailments, sore throats, and muscle pain.

CONSERVATION

Cottonwoods require annual spring floods to deposit silt in the floodplain where seeds can germinate. Groves of cottonwoods eventually disappear when rivers and streams are dammed, dewatered, or straightened. Downstream from dams such as Fort Peck, Kerr, and Tiber, where historical high flows have been drastically moderated, you can see cottonwoods more than 100 years old towering over sandbars with no young cottonwood trees to replace them.

TOP TO BOTTOM: PAUL N. QUENEAU; STEVEN AKRE

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